US007175034B2

(12) **United States Patent**
Nook et al.

(10) **Patent No.: US 7,175,034 B2**
(45) **Date of Patent: Feb. 13, 2007**

(54) **MODULAR, ADJUSTABLE DISPLAY RACK**

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(73) Assignee: **Harbor Industries, Inc.**, Grand Haven, MI (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 127 days.

(21) Appl. No.: **10/462,350**

(22) Filed: **Jun. 16, 2003**

(65) **Prior Publication Data**

US 2004/0060884 A1 Apr. 1, 2004

Related U.S. Application Data

(60) Provisional application No. 60/388,891, filed on Jun. 14, 2002.

(51) **Int. Cl.**
A47B 43/00 (2006.01)

(52) **U.S. Cl.** **211/189**

(58) **Field of Classification Search** 211/94.01, 211/87.01, 88.01, 90.01, 90.02, 90.04, 103, 211/186, 187, 96, 99; 248/242; 312/245
See application file for complete search history.

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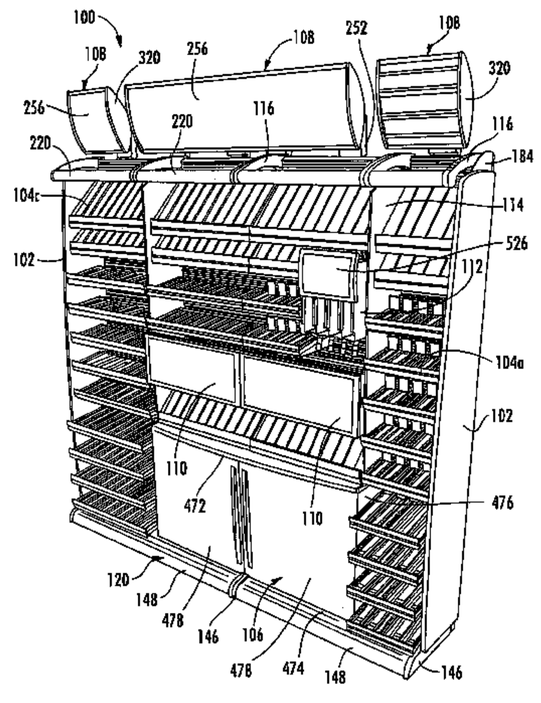
(57) **ABSTRACT**

A point of purchase display stand for displaying products includes shelving, lights, cabinets, signs, baskets, and other items that may be supported on a slot wall positioned in the back of the stand. The slot wall may be made up of horizontal slots that allow the aforementioned items to be positioned at a plurality of vertical locations and a virtually infinite number of horizontal locations. End panels and doors may also be added to the display stand for providing security to the contents of the display stand. The shelves may only require a small amount of rotation to be removed from the slot wall. The shelves may be oriented in a plurality of different angular orientations, and they may be optionally connected with adjacent shelves so that any sagging of a given shelf is transmitted to the adjacent shelves, thereby maintaining the shelves in horizontal alignment with each other.

63 Claims, 88 Drawing Sheets



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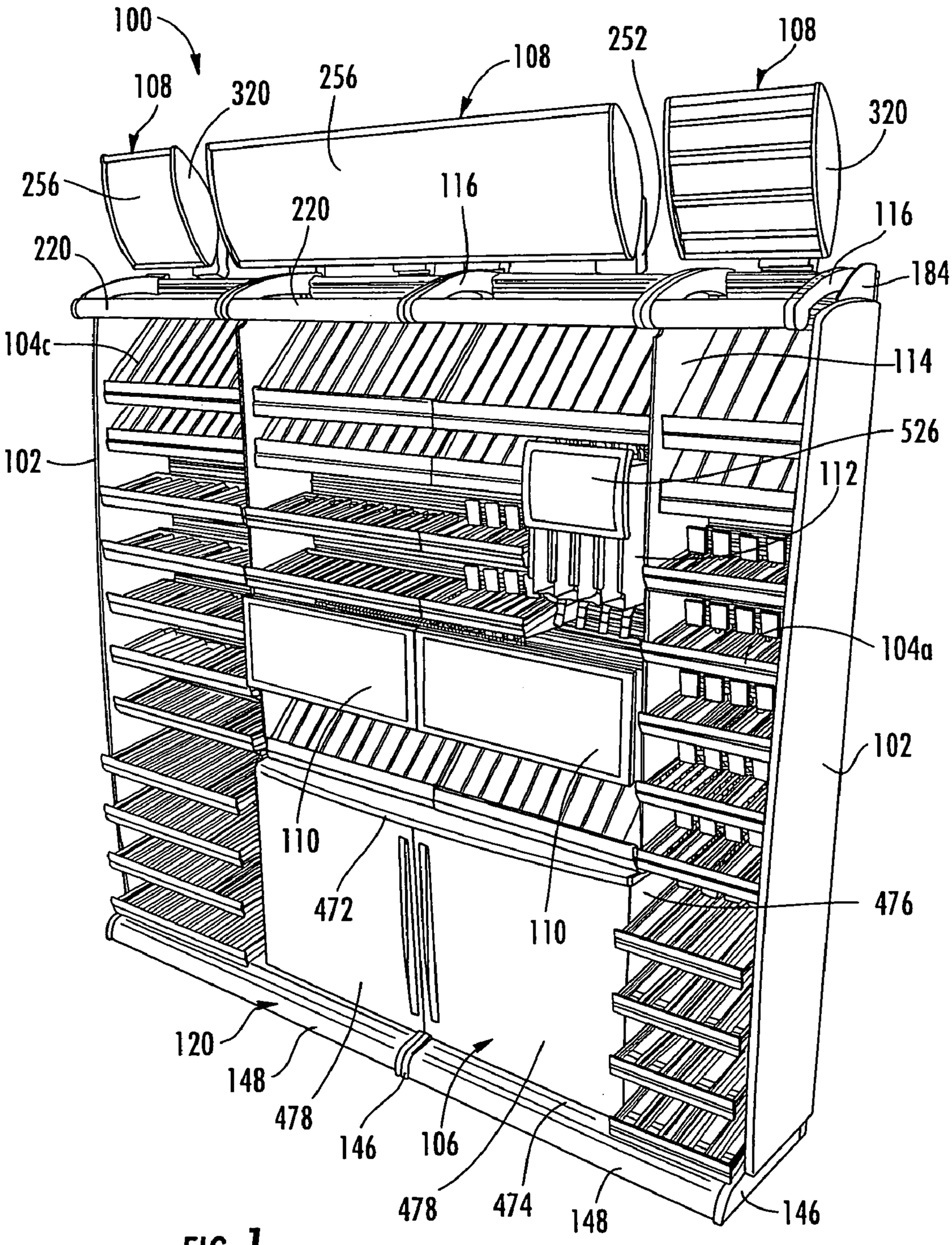
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FIG. 1

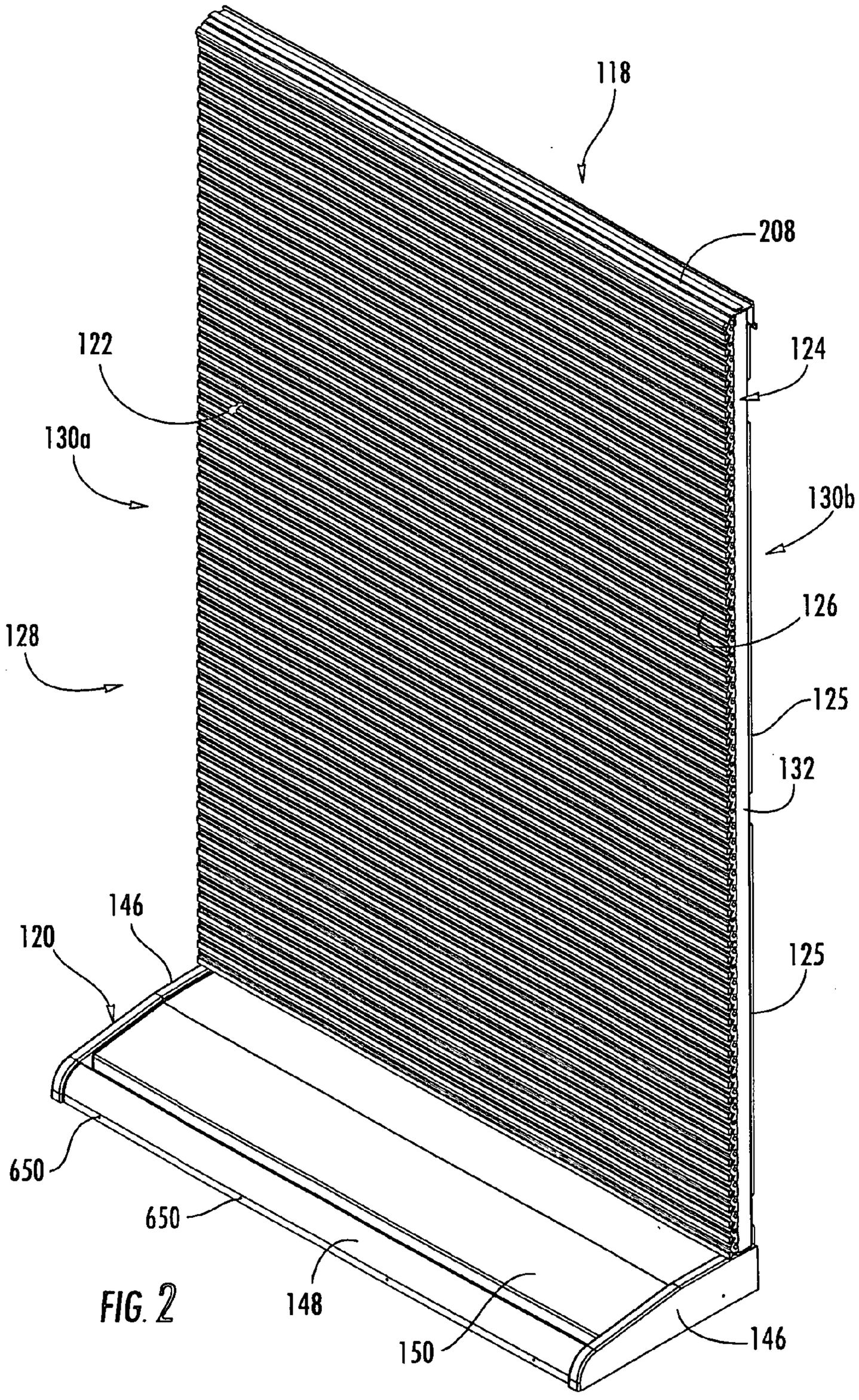
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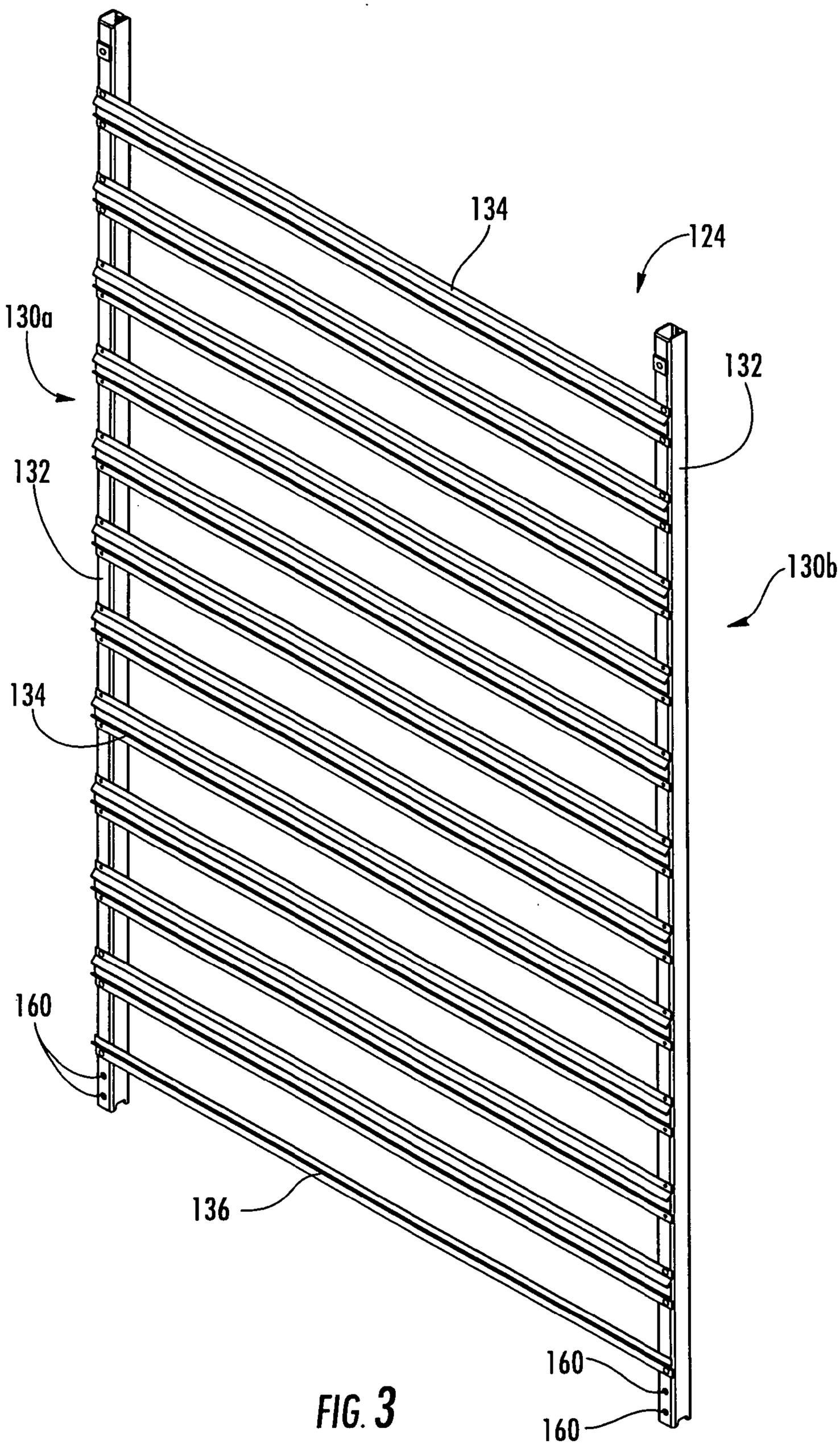
FIG. 2



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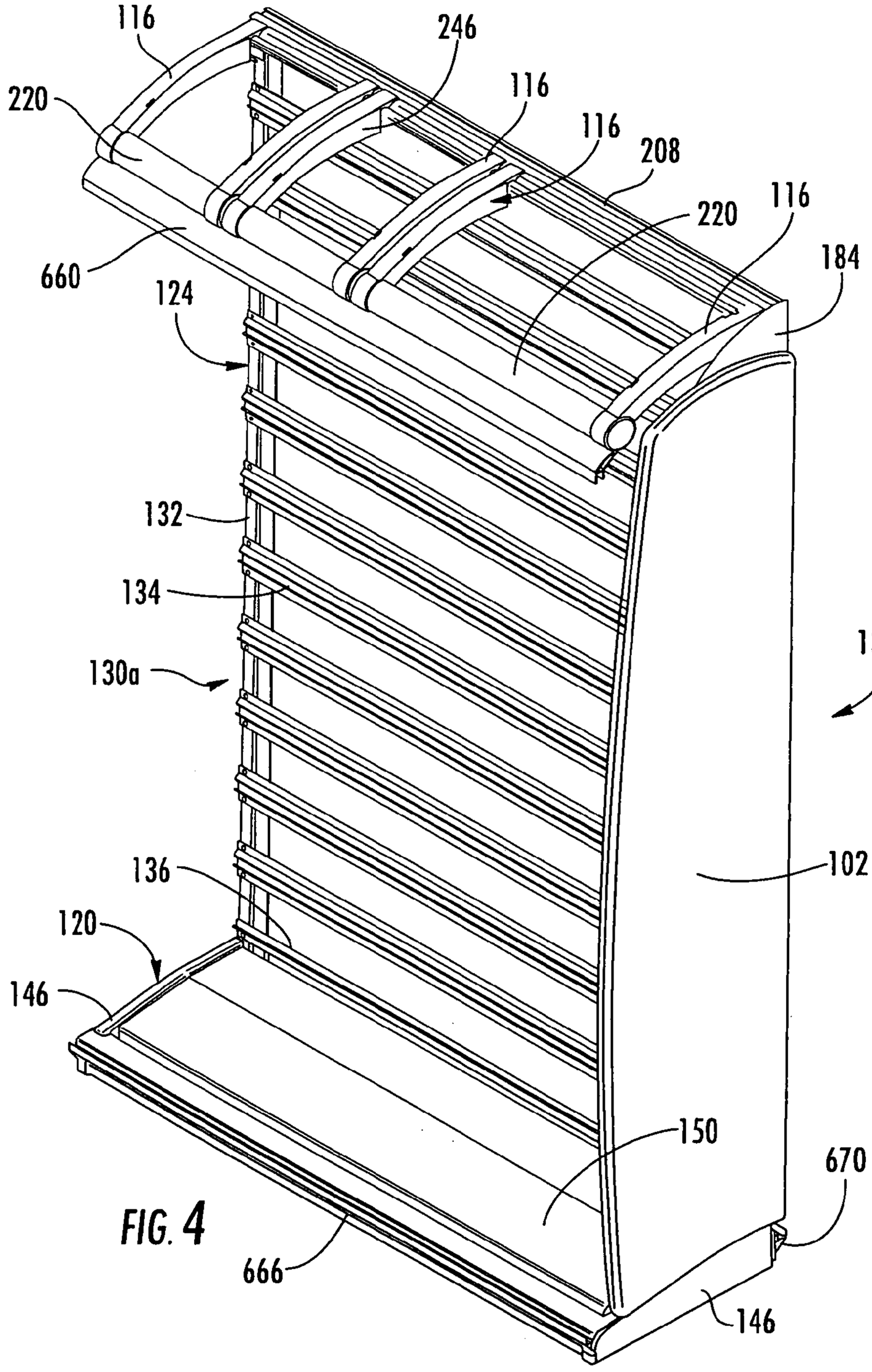
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FIG. 4

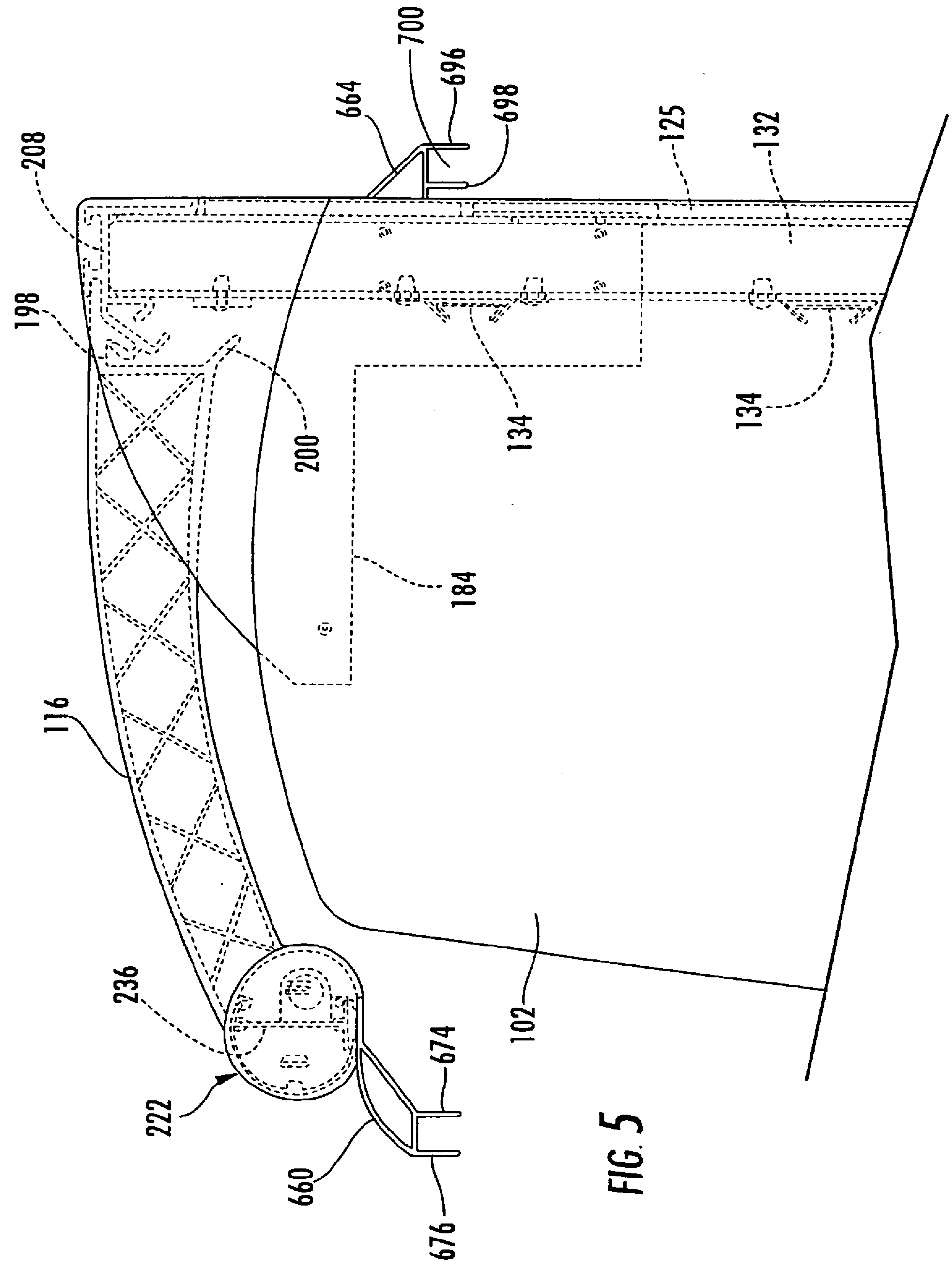
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FIG. 5

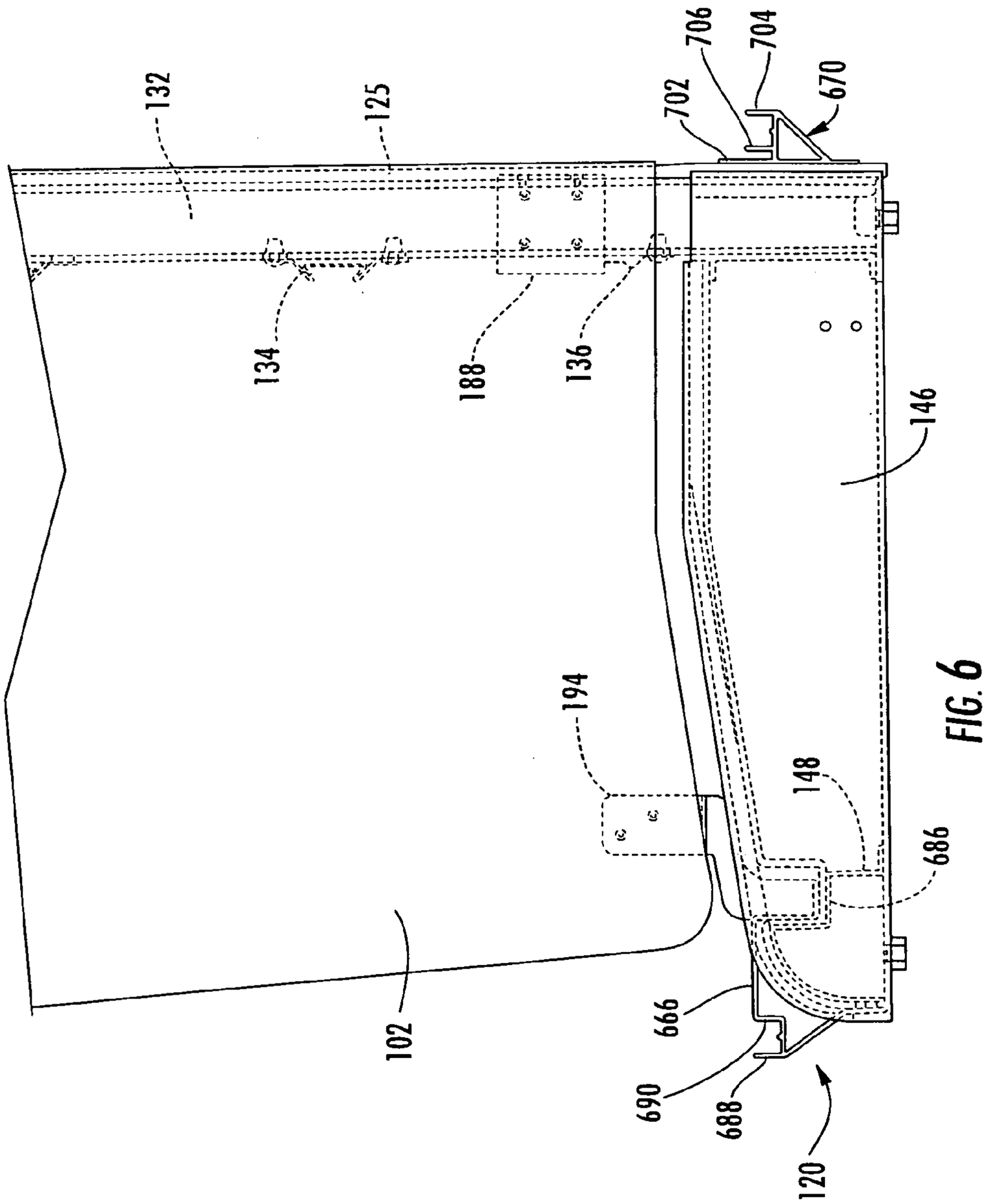
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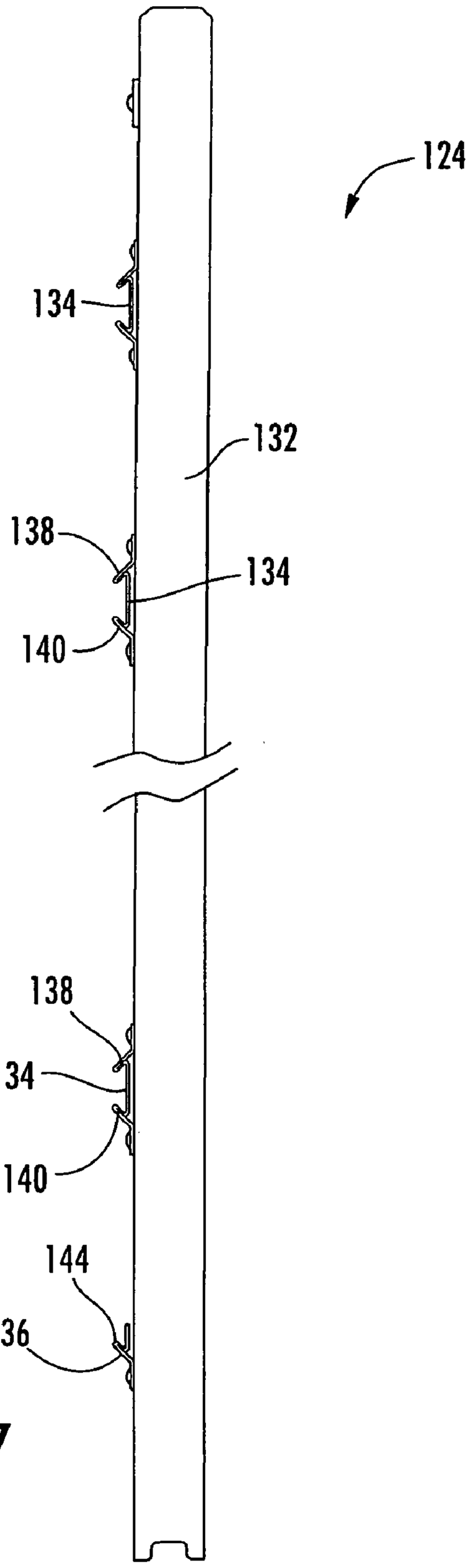
FIG. 6



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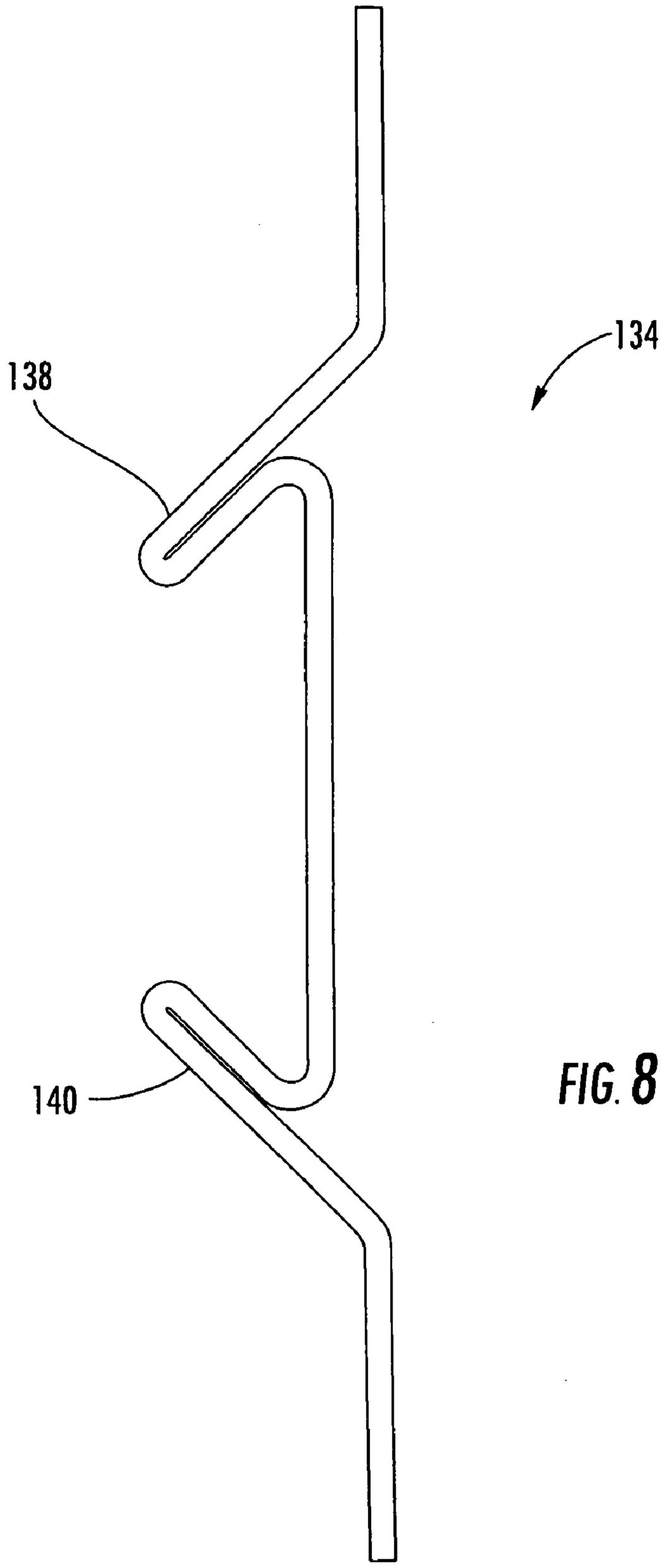
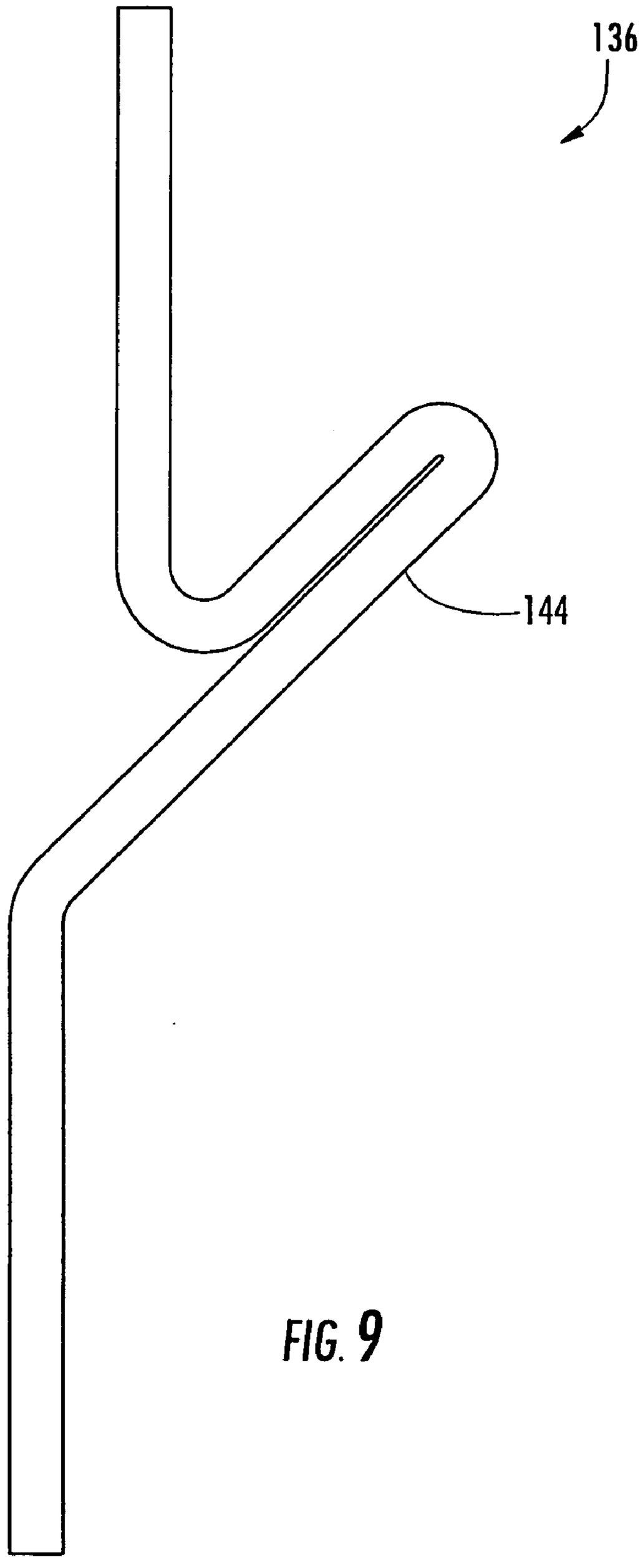


FIG. 8



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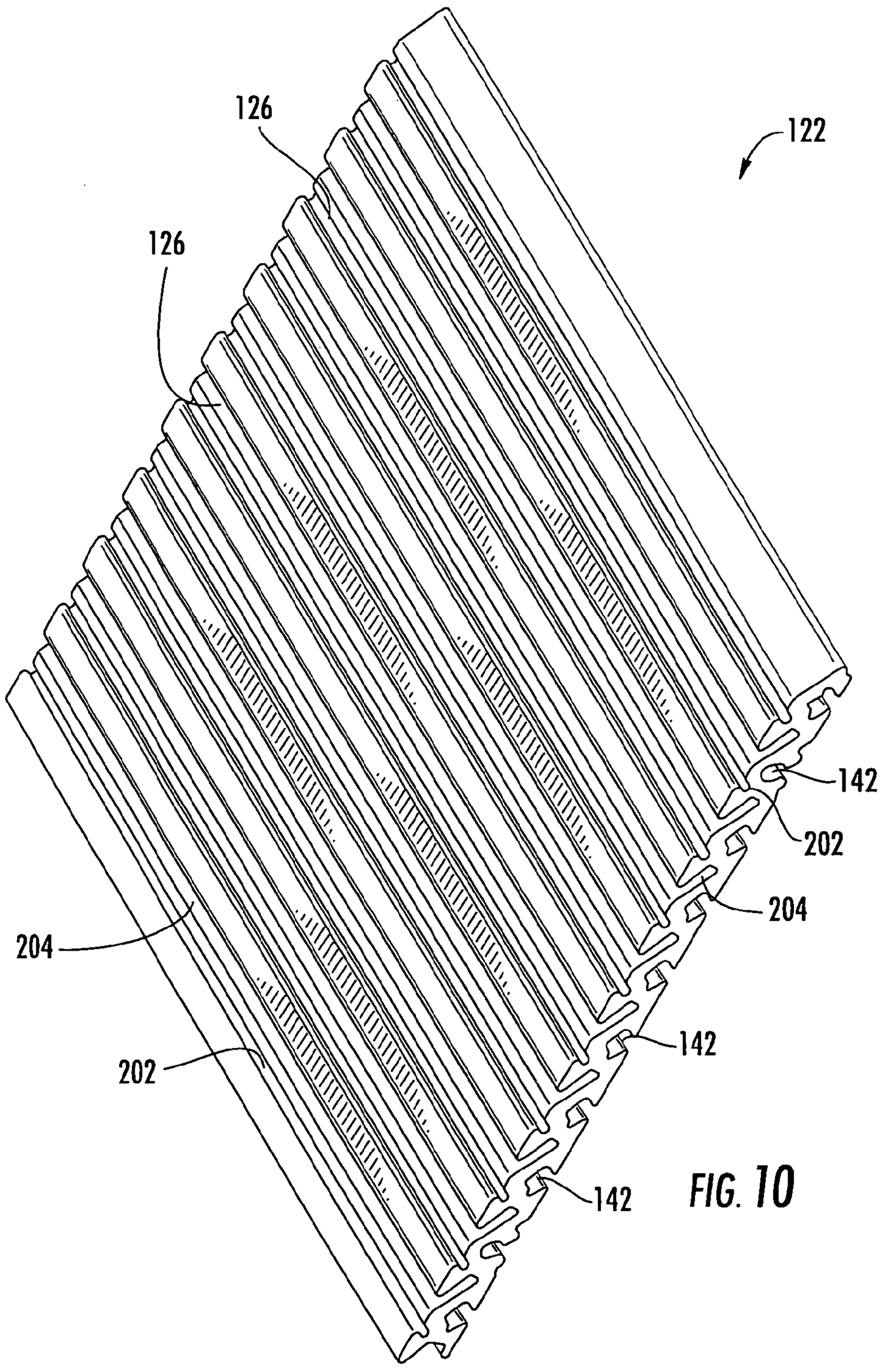

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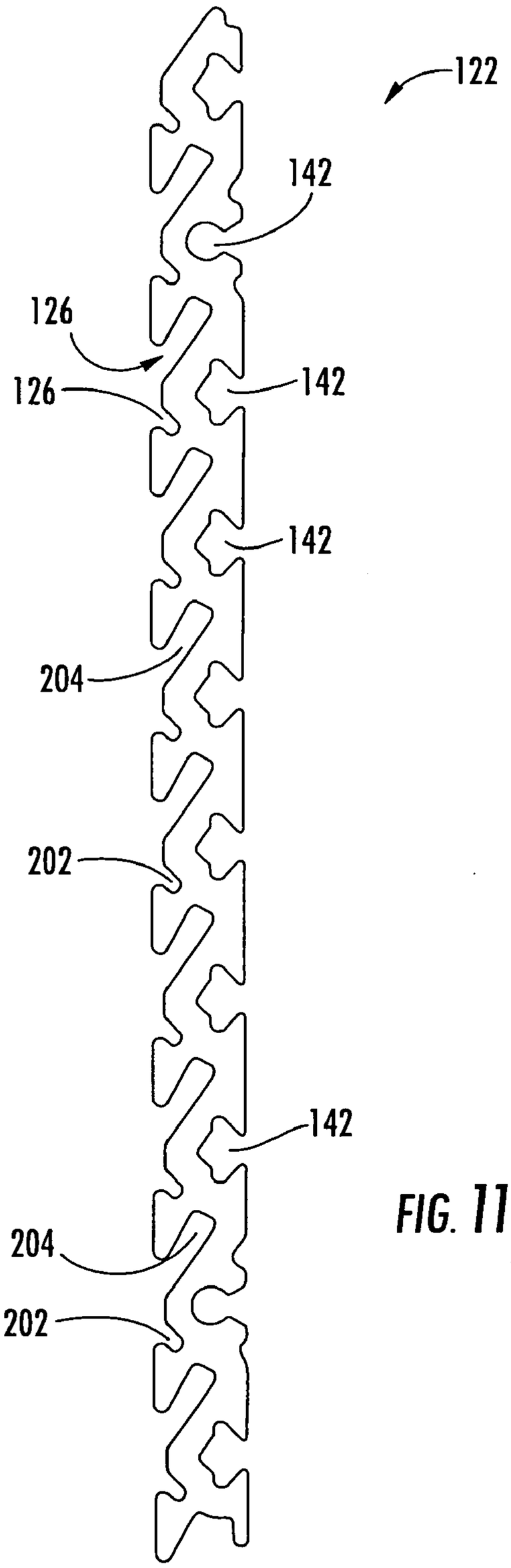

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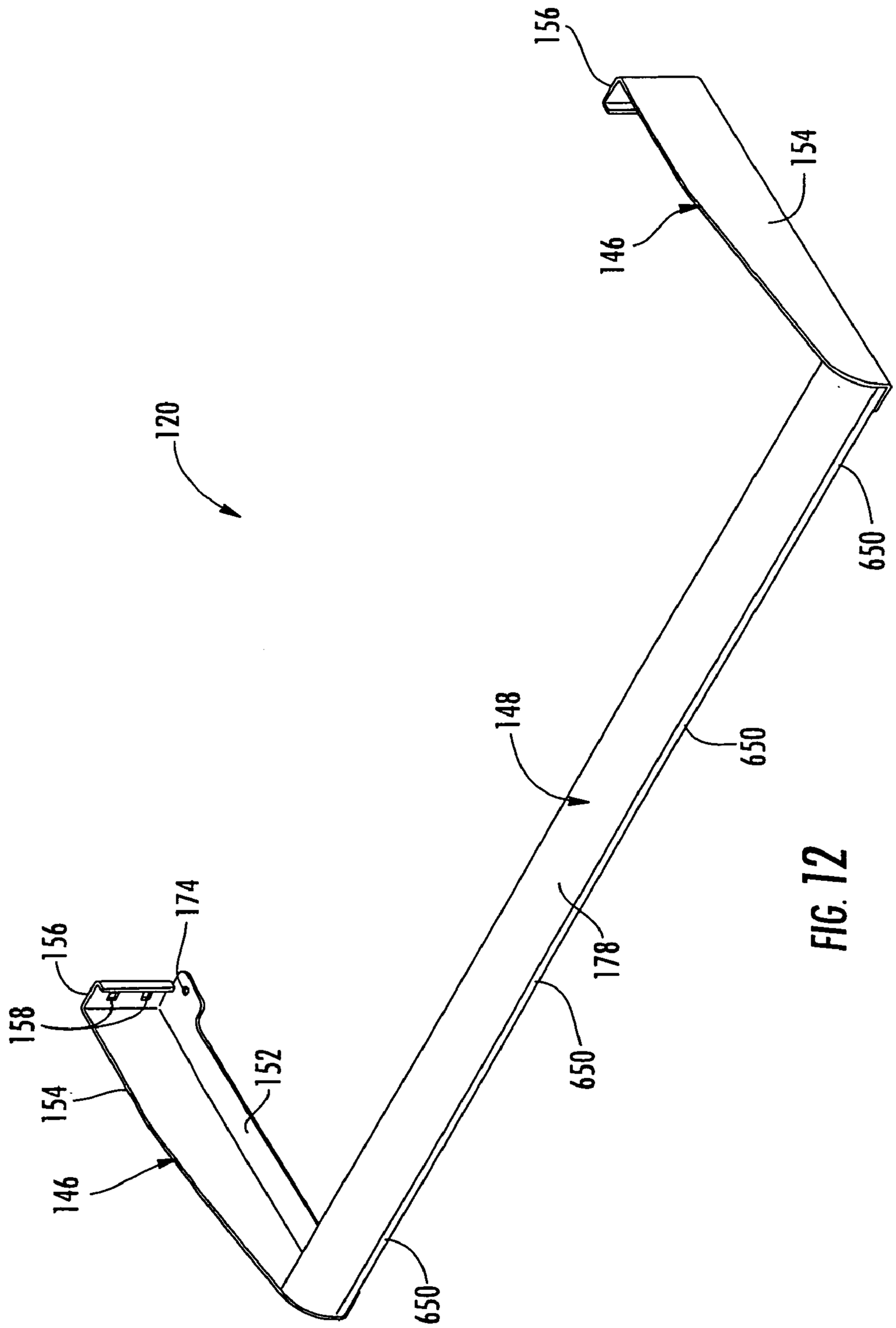
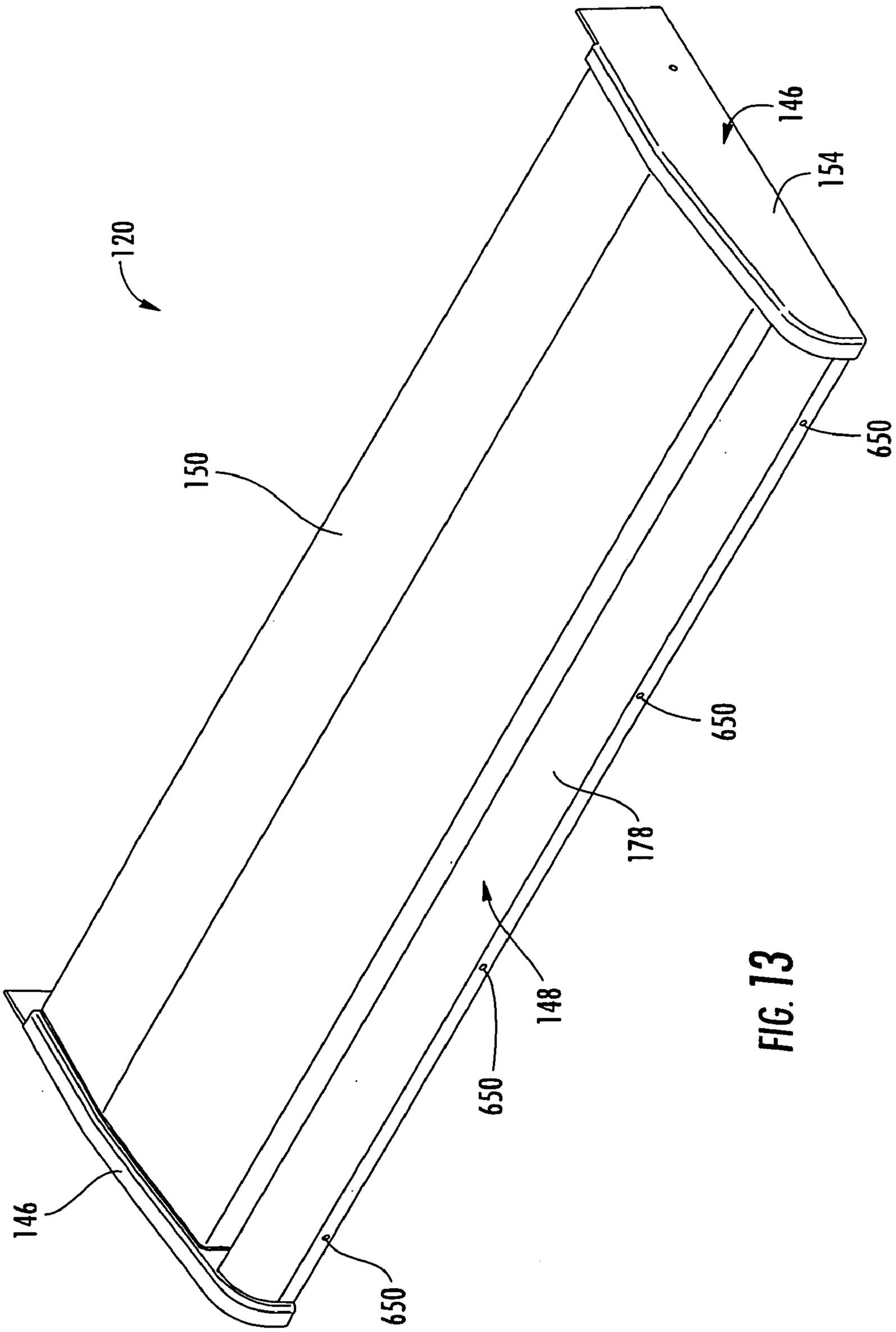


FIG. 12



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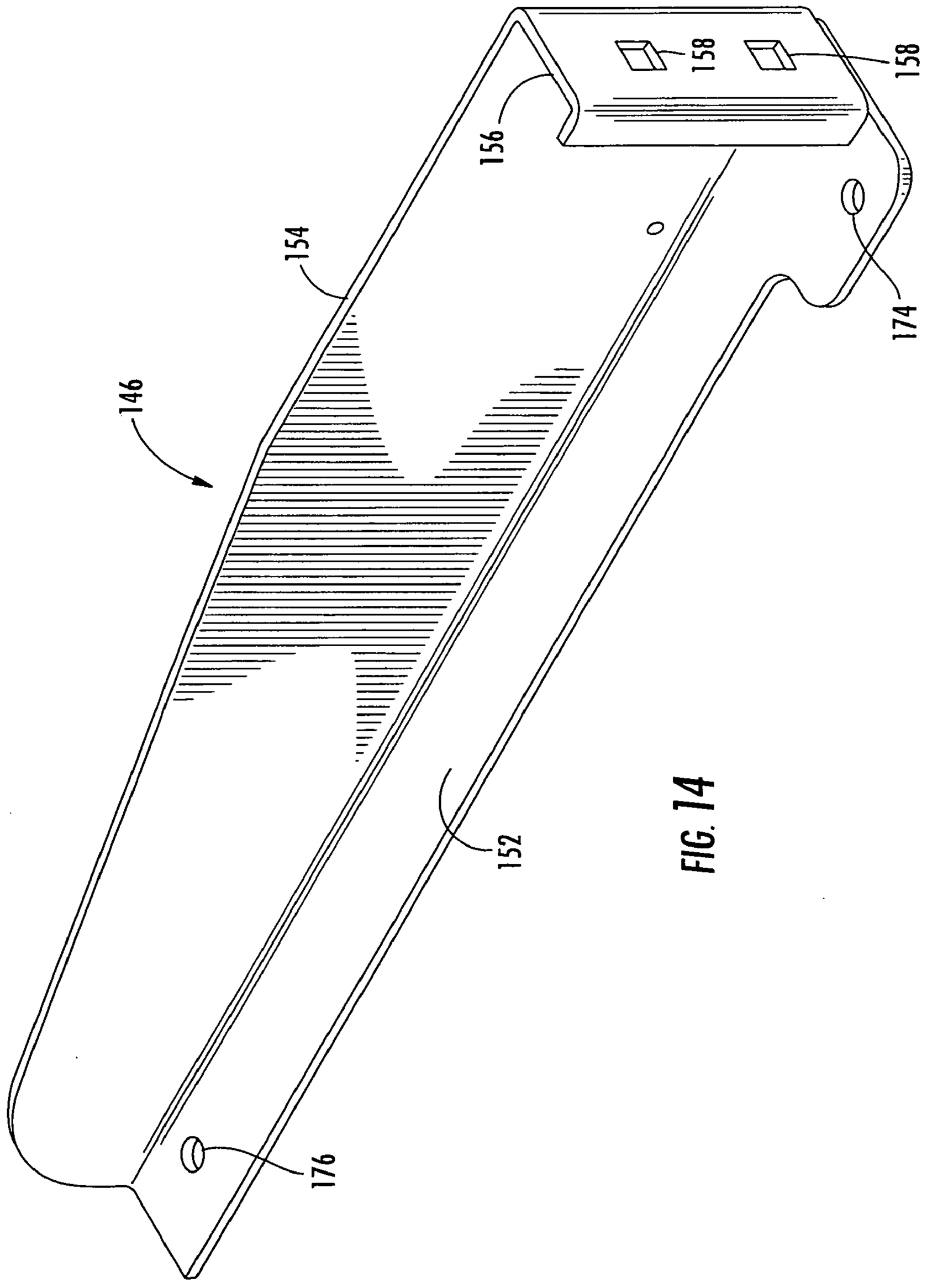

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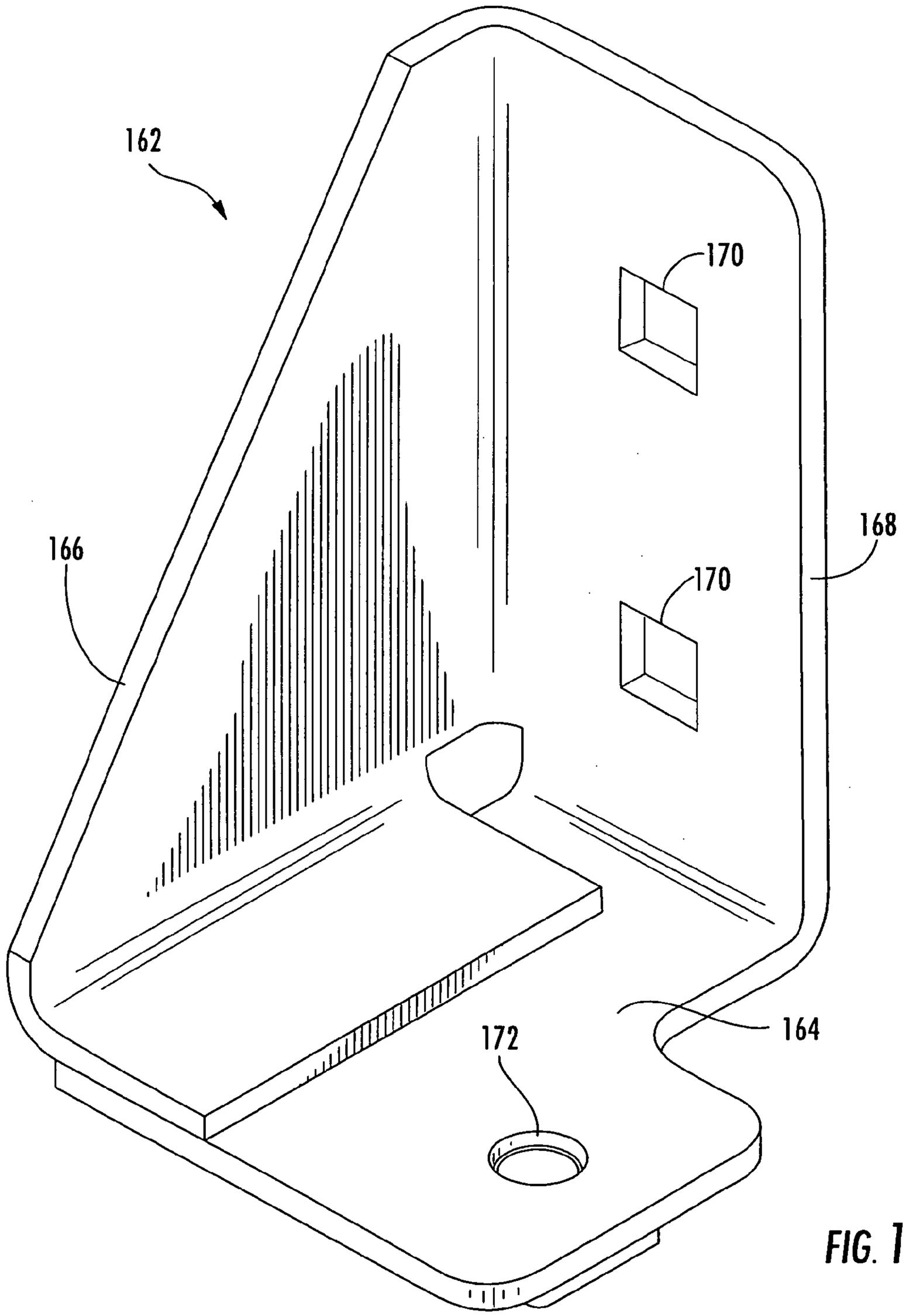

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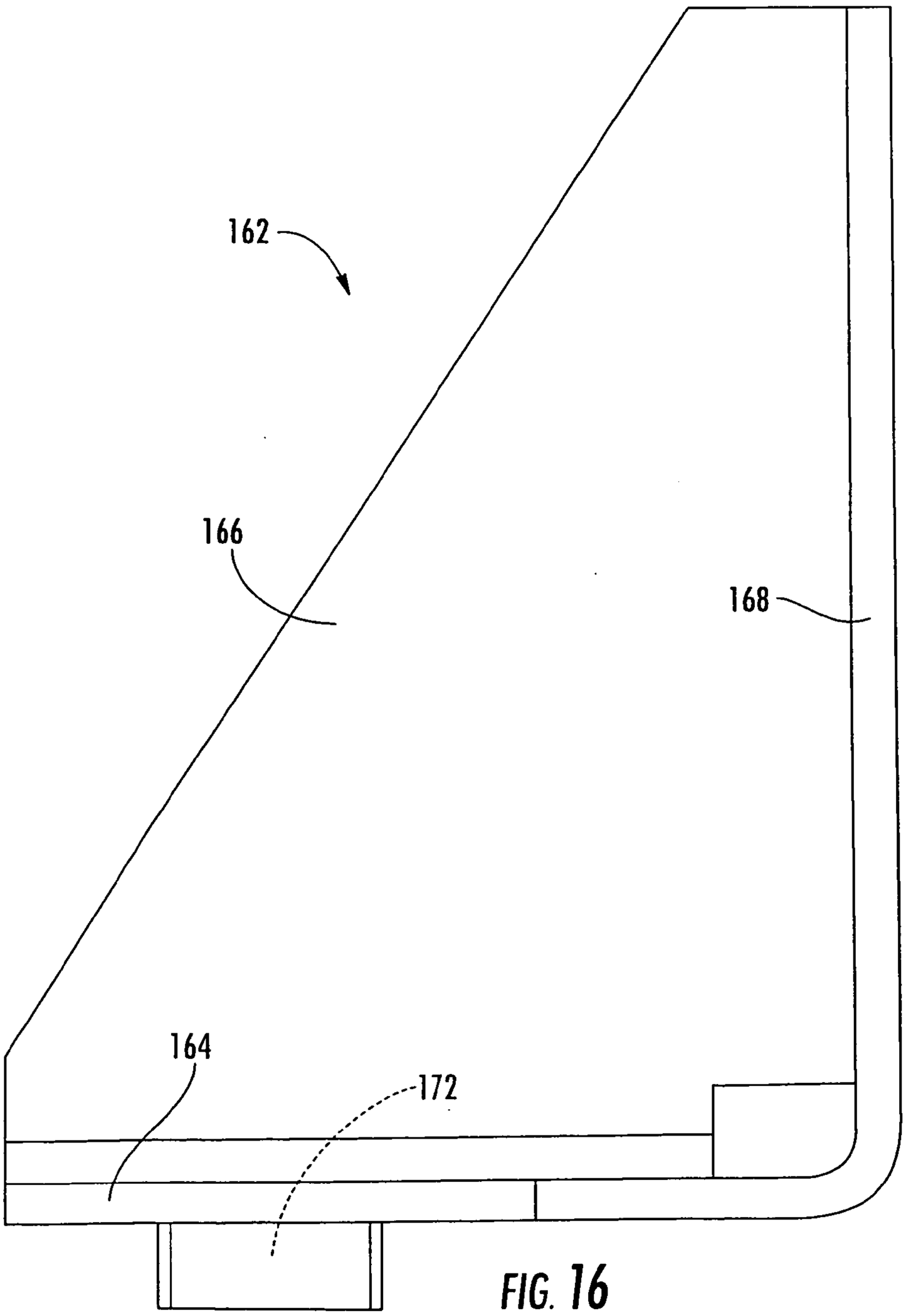

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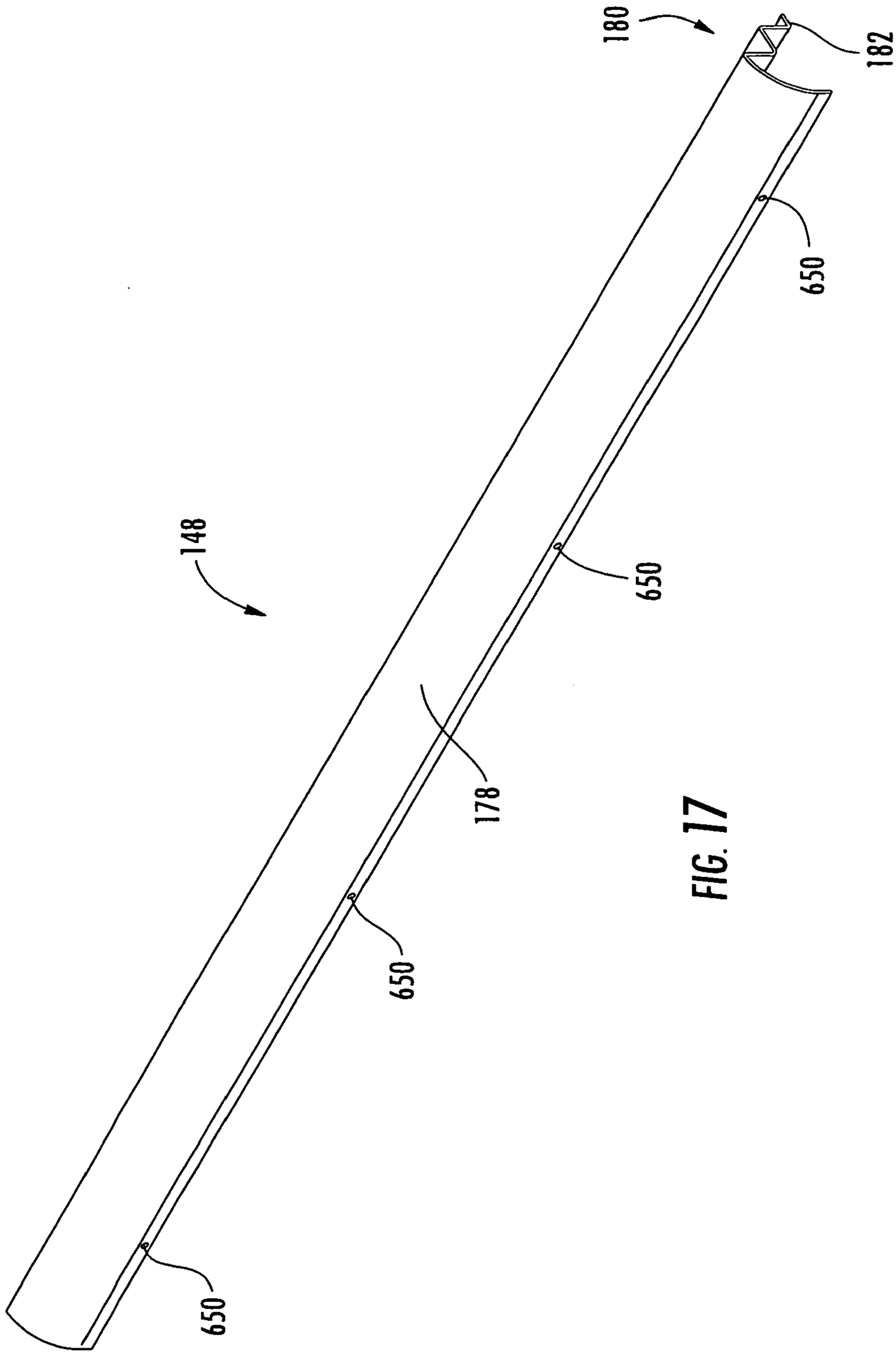

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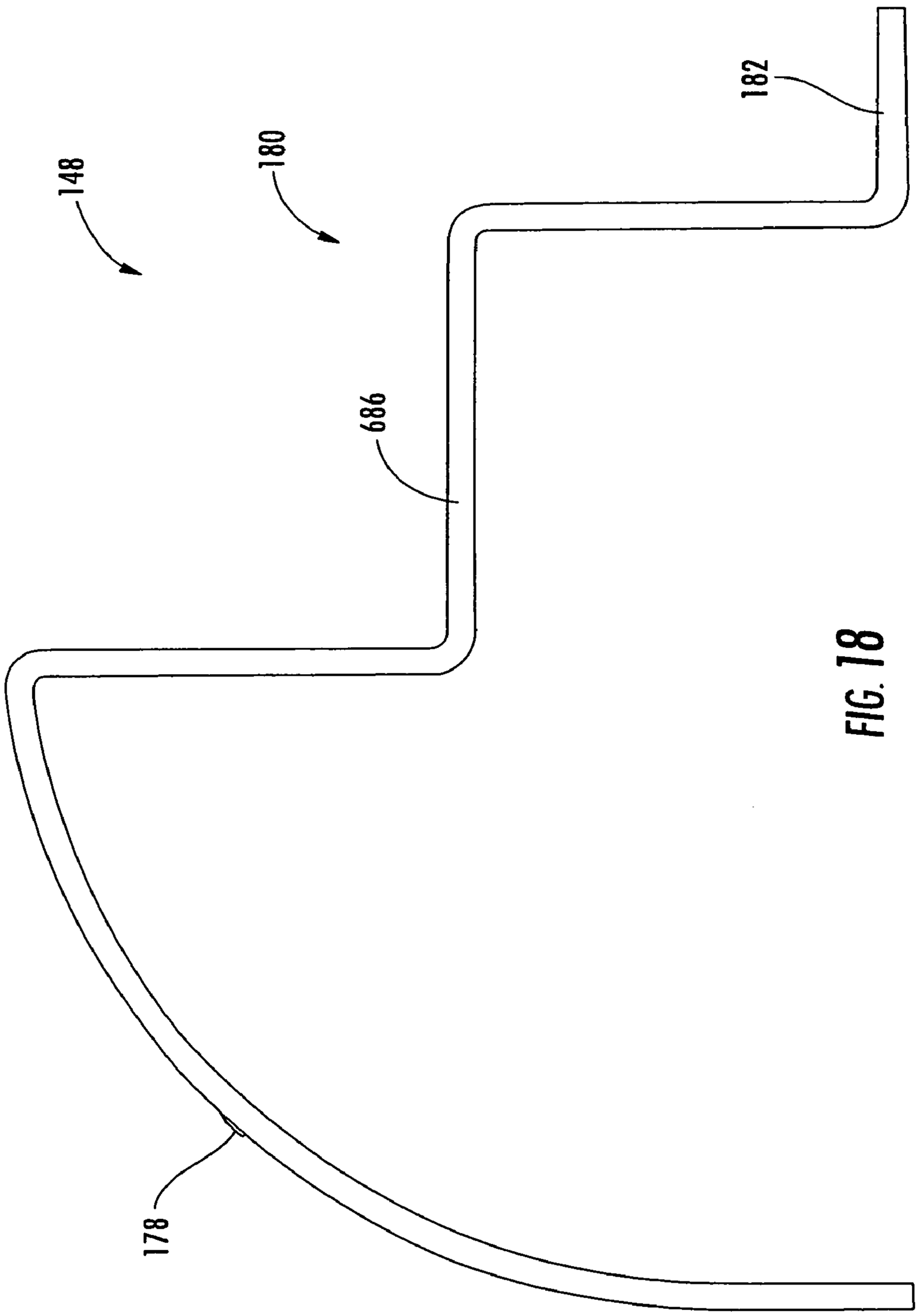

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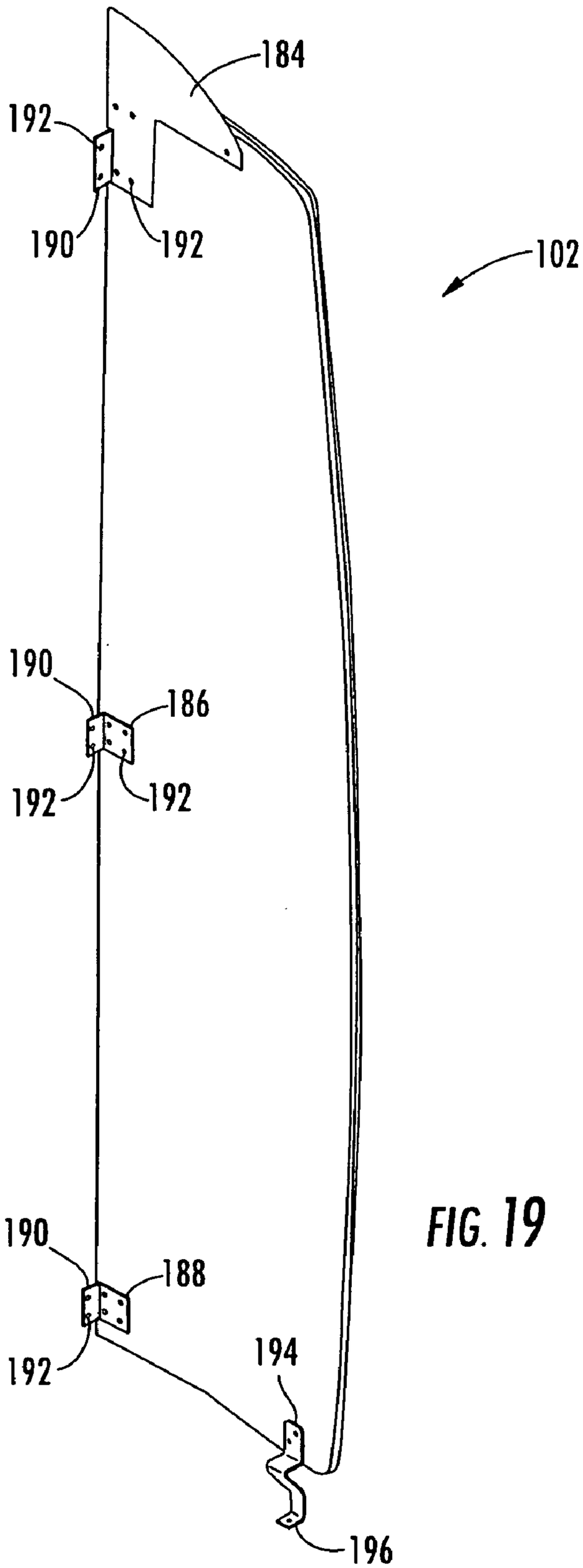

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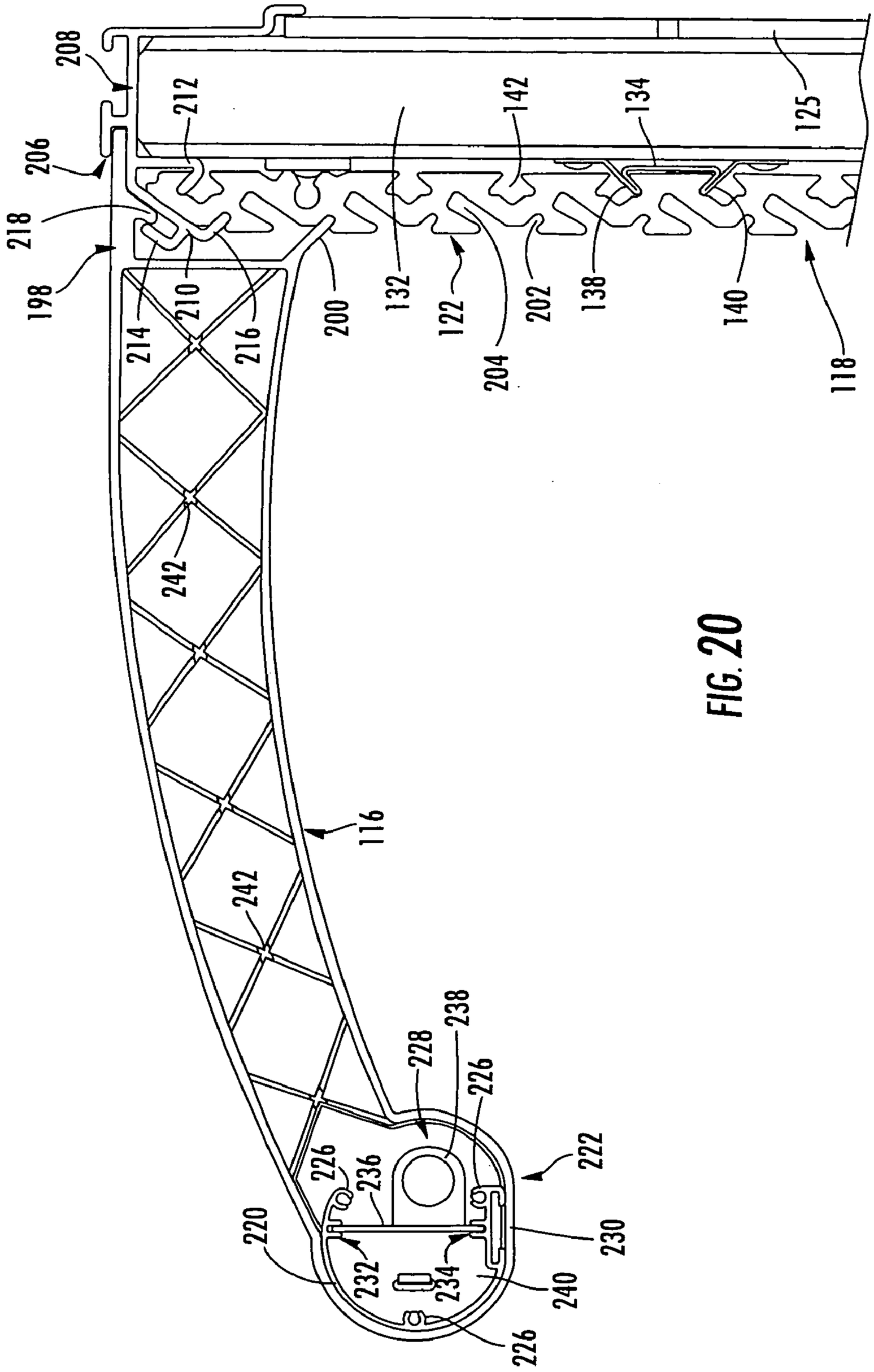
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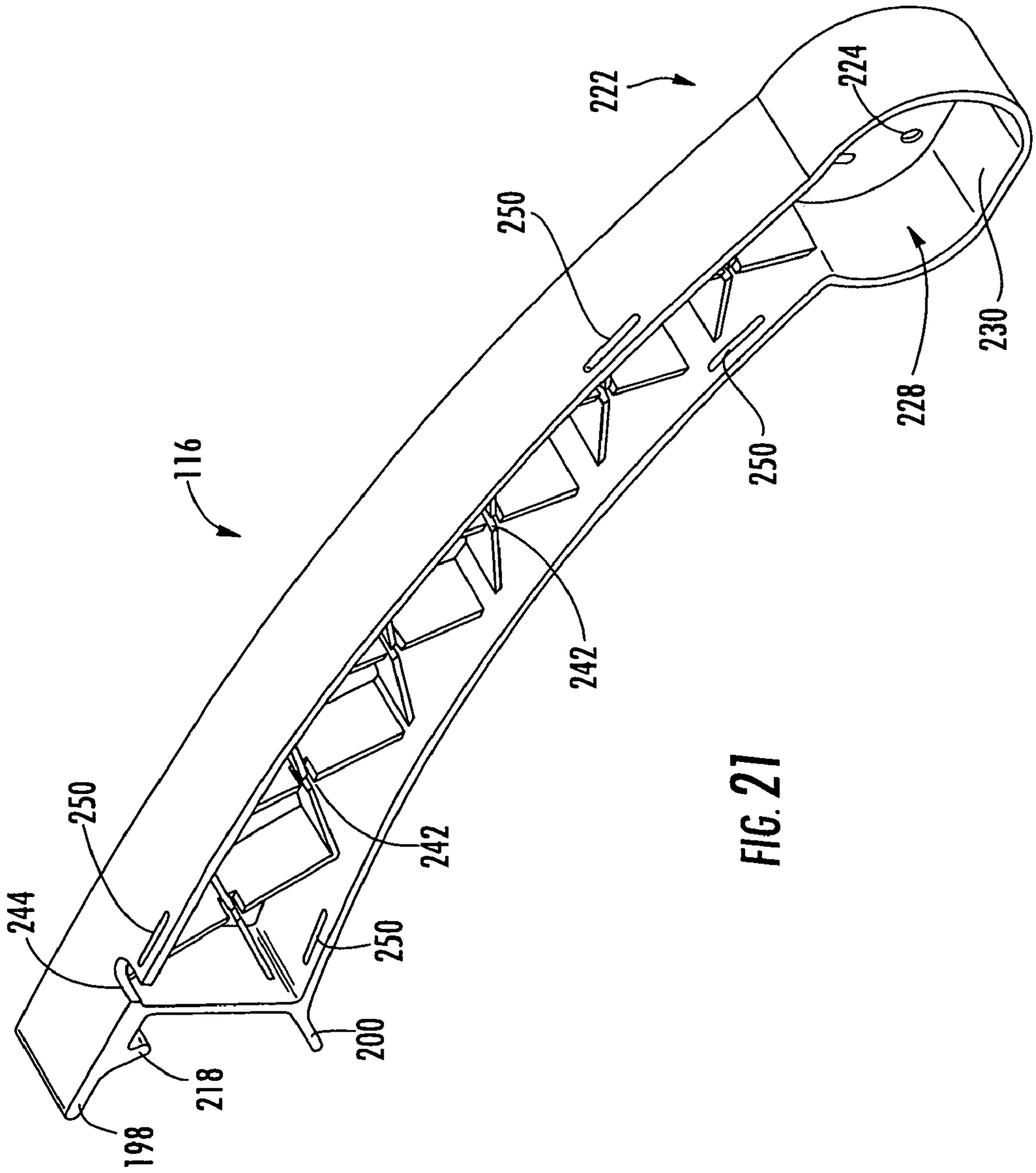
FIG. 20



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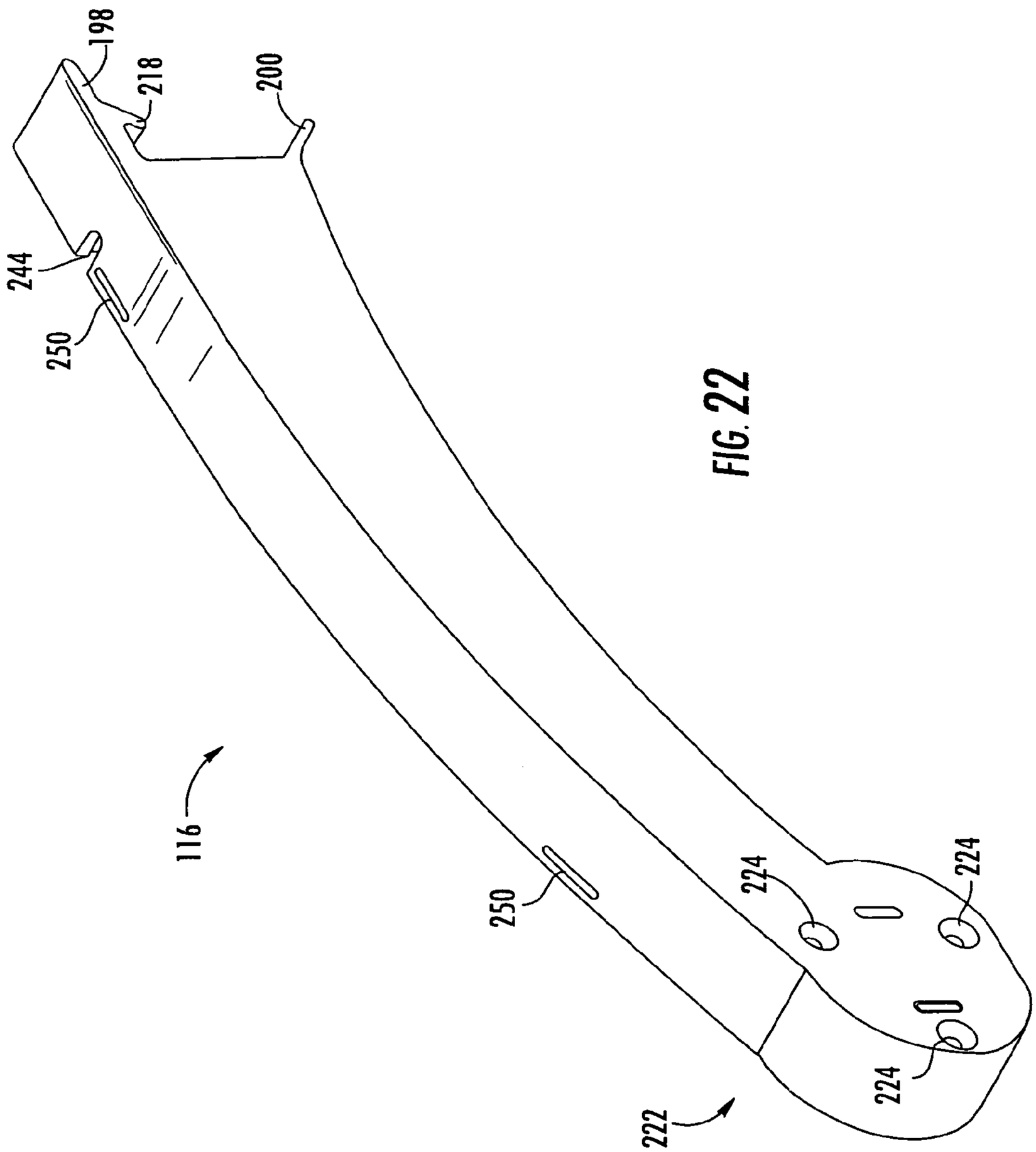

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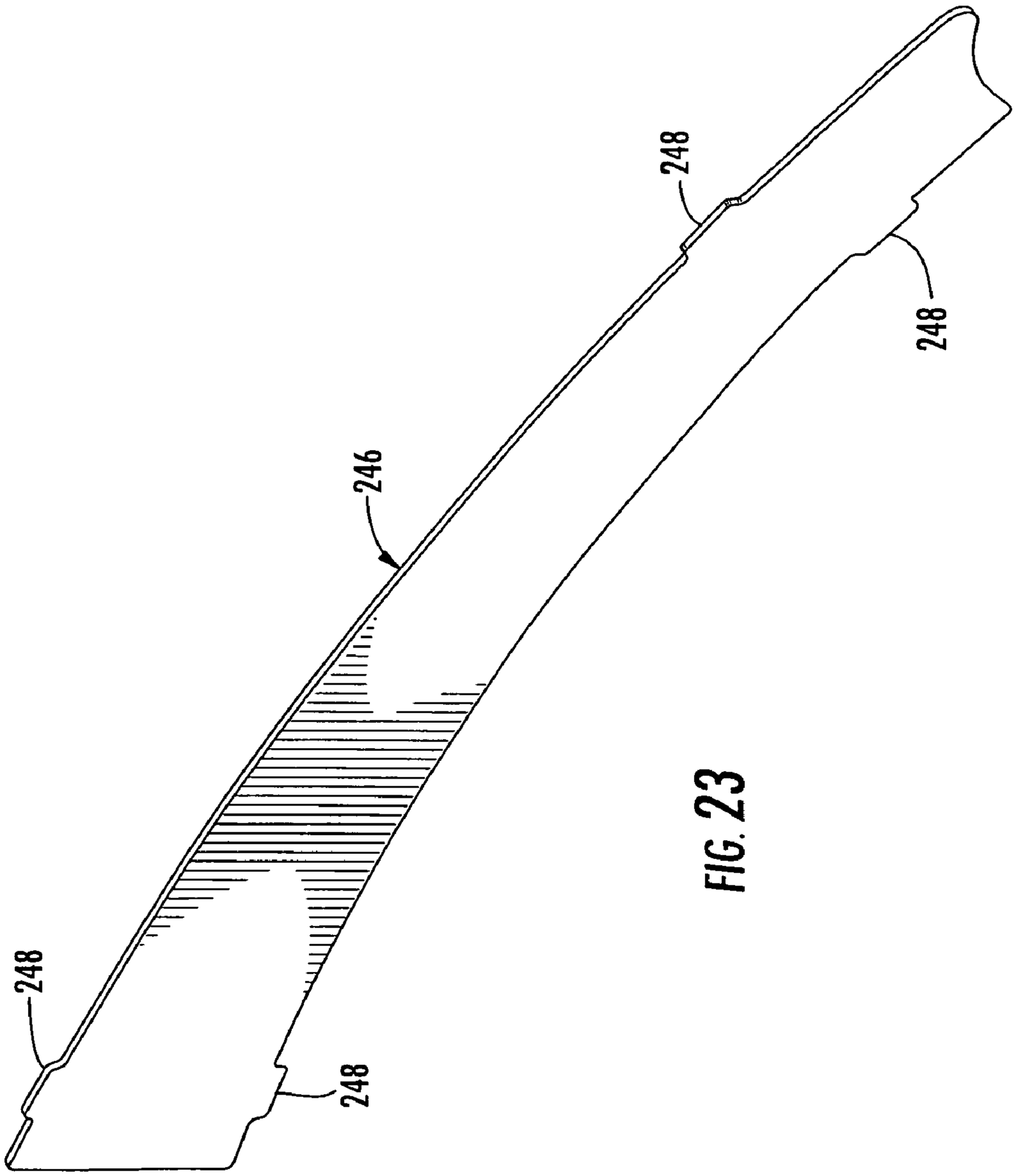

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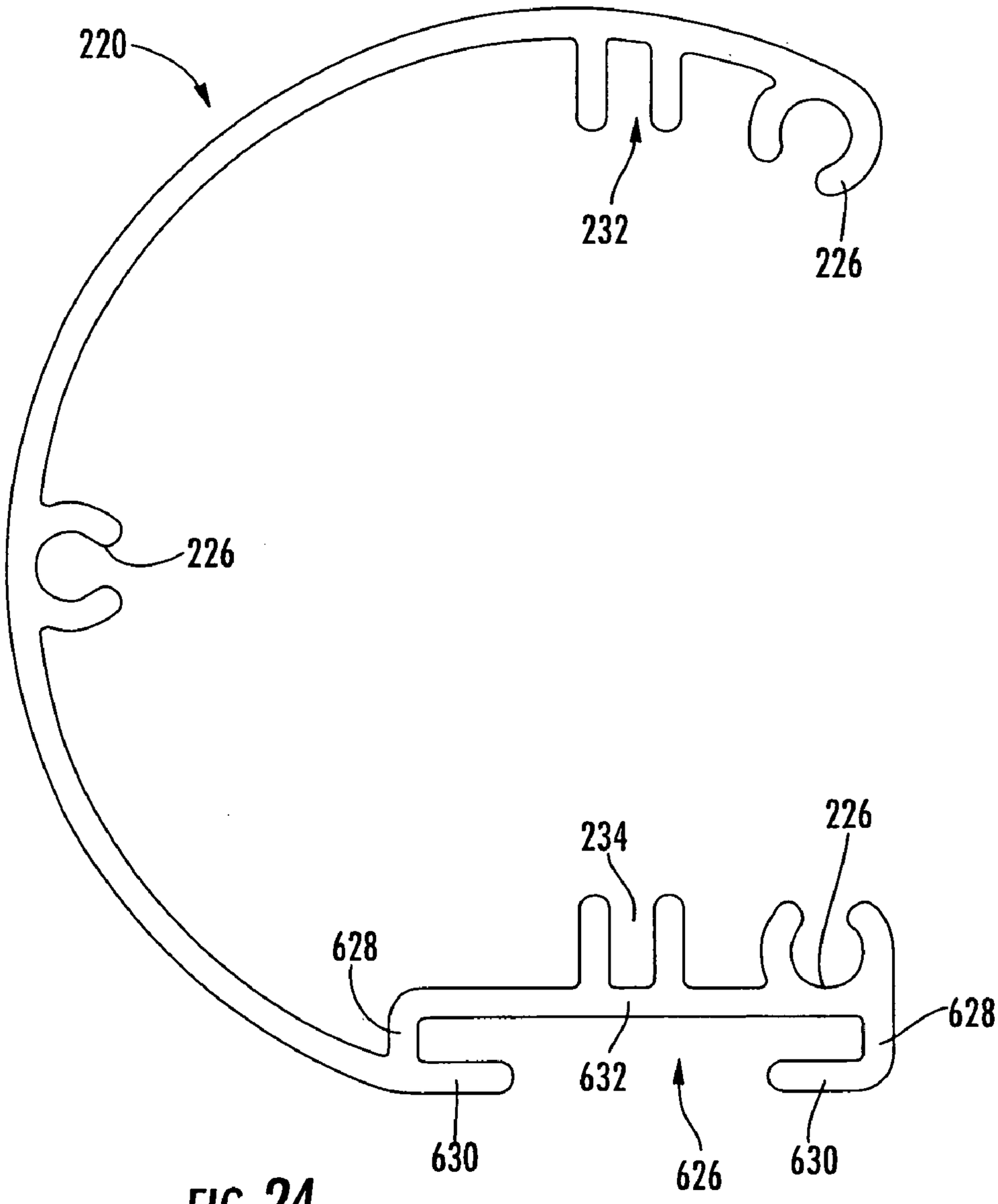

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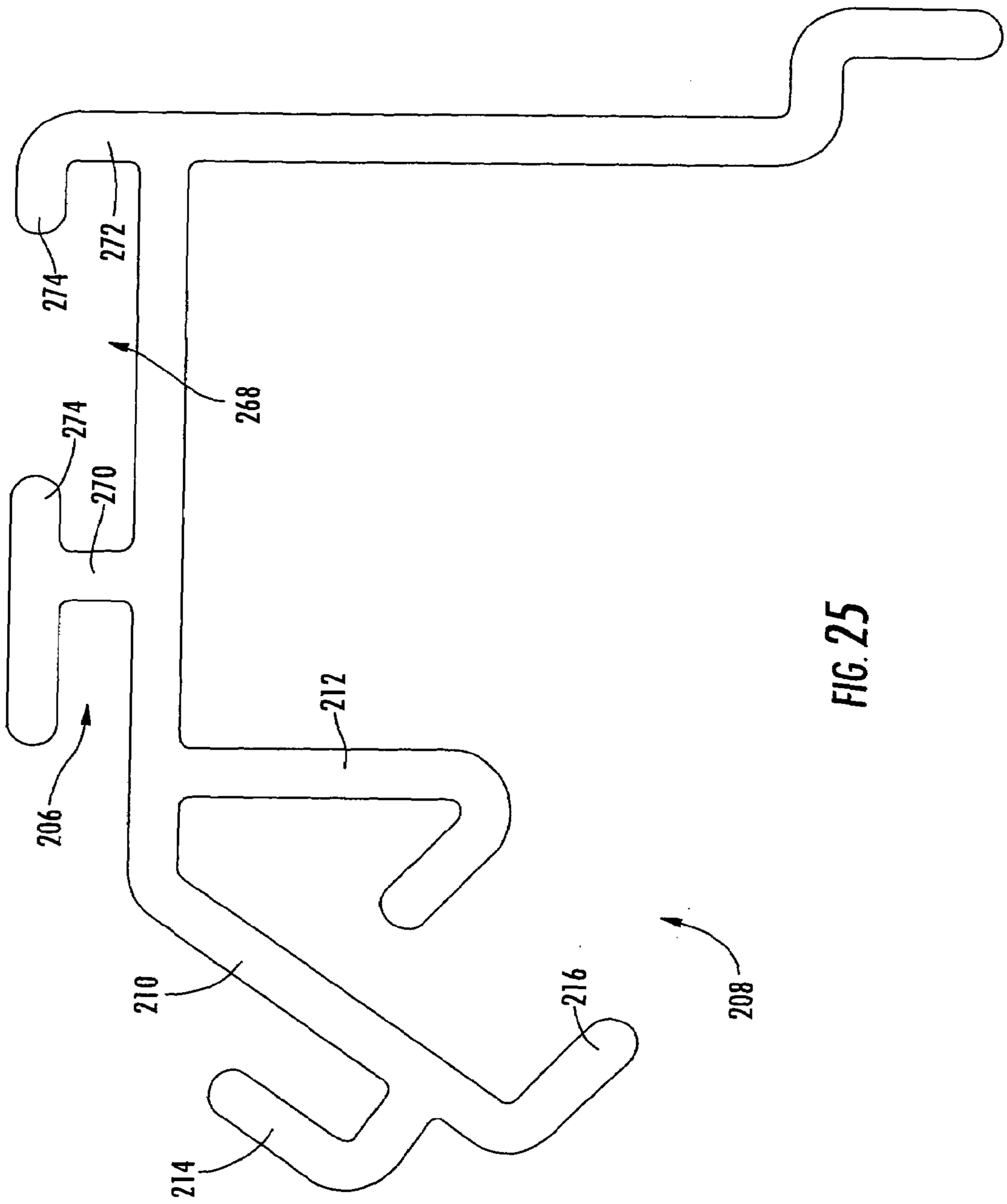

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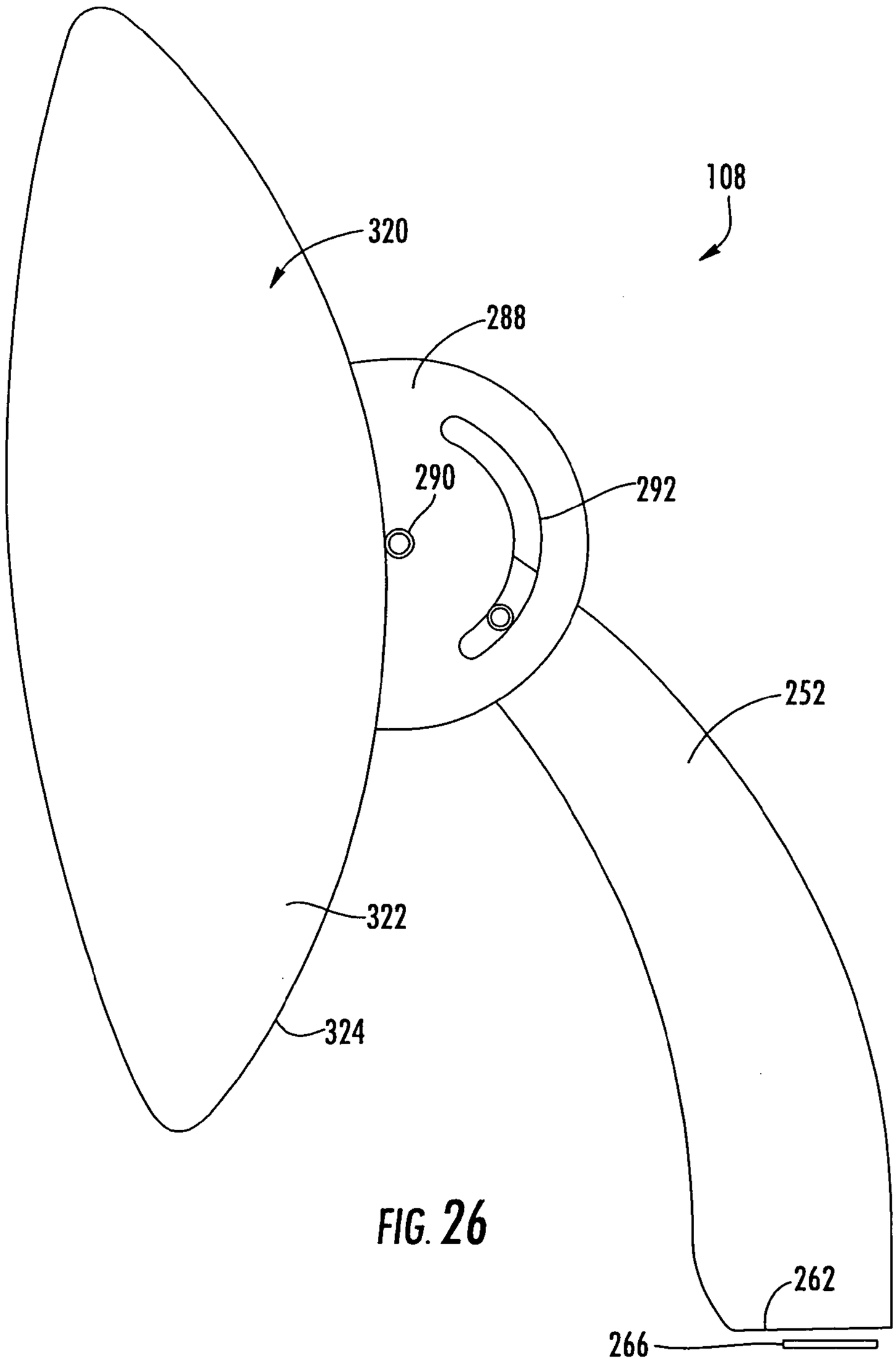

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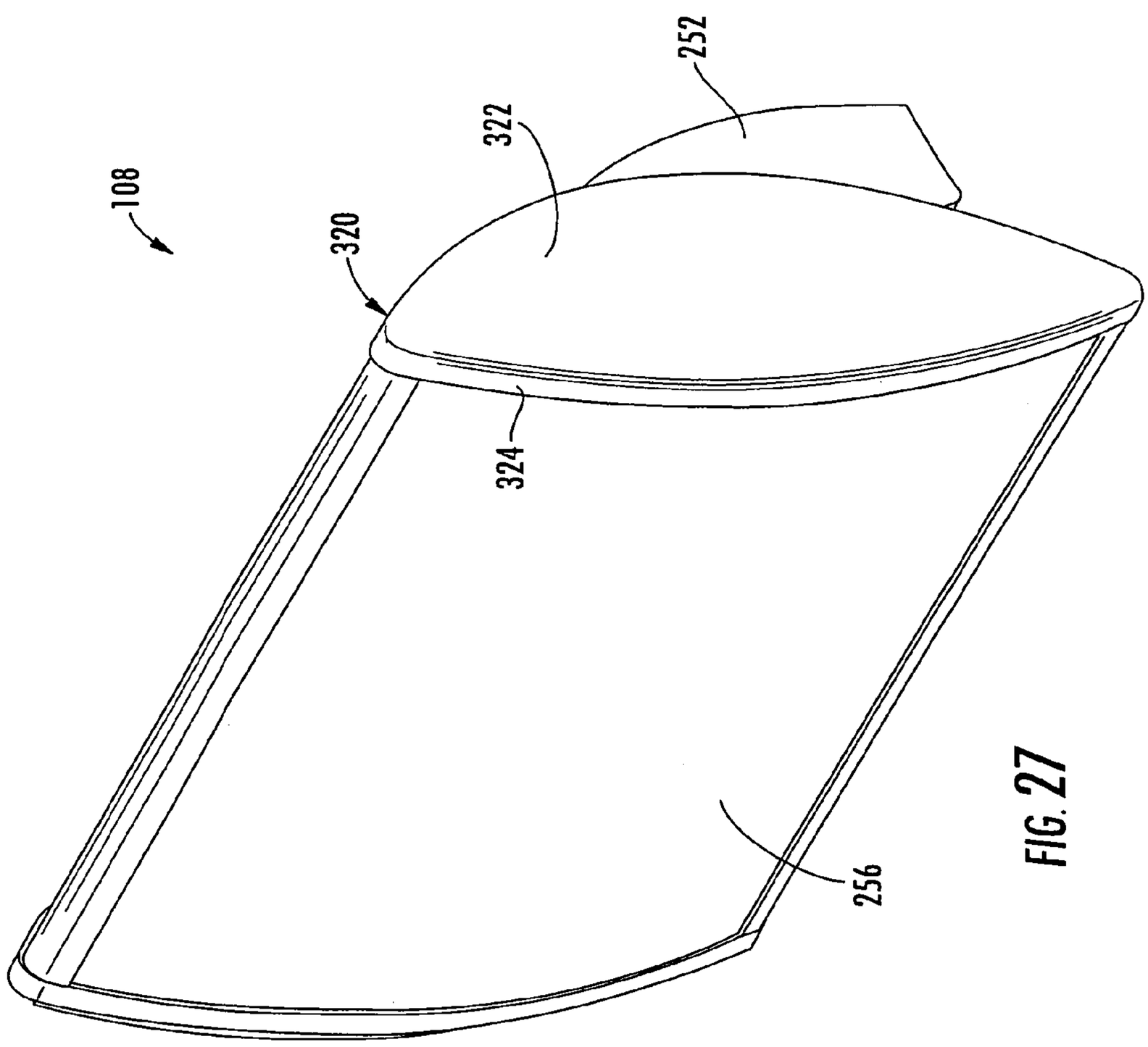

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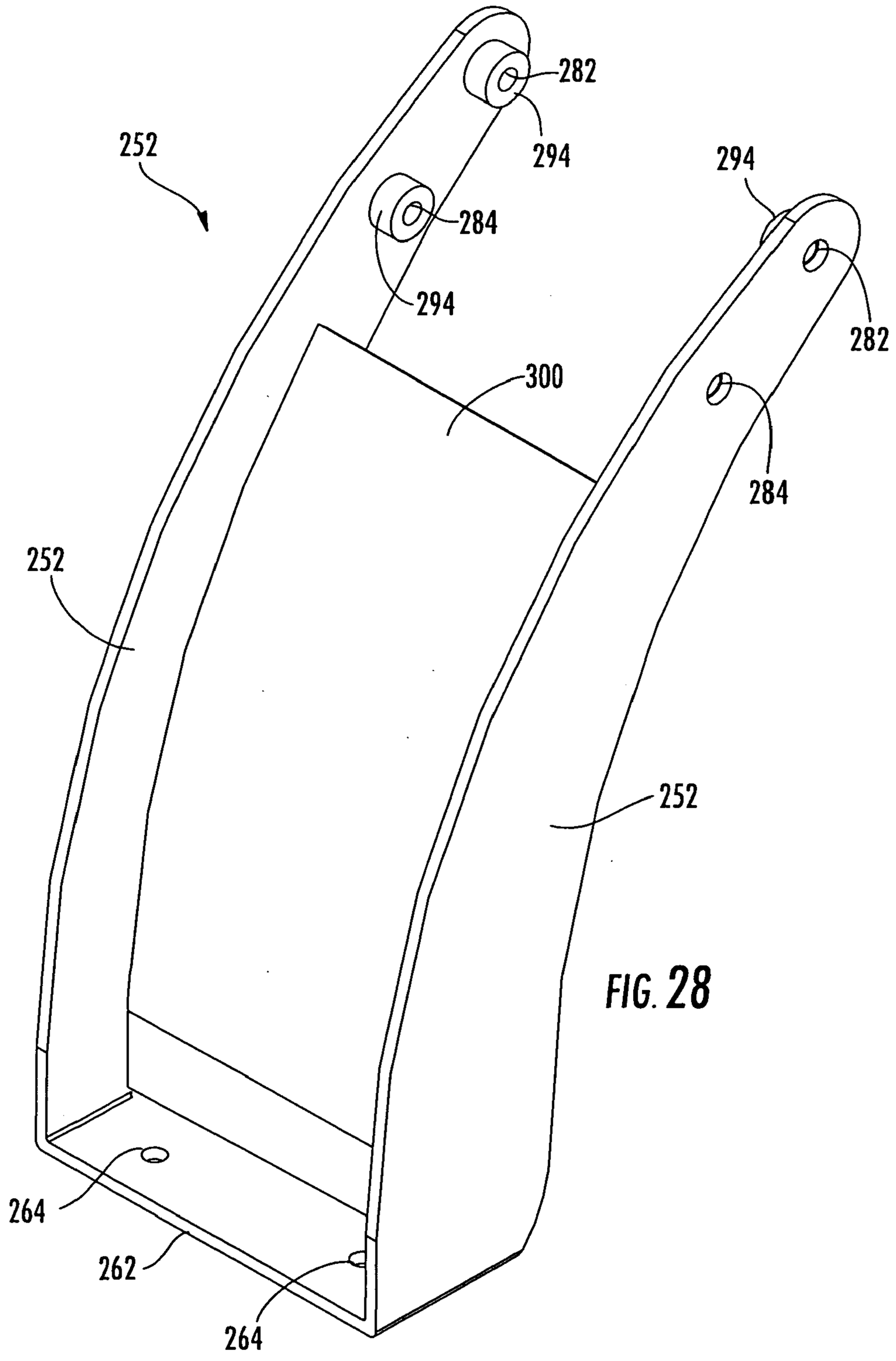

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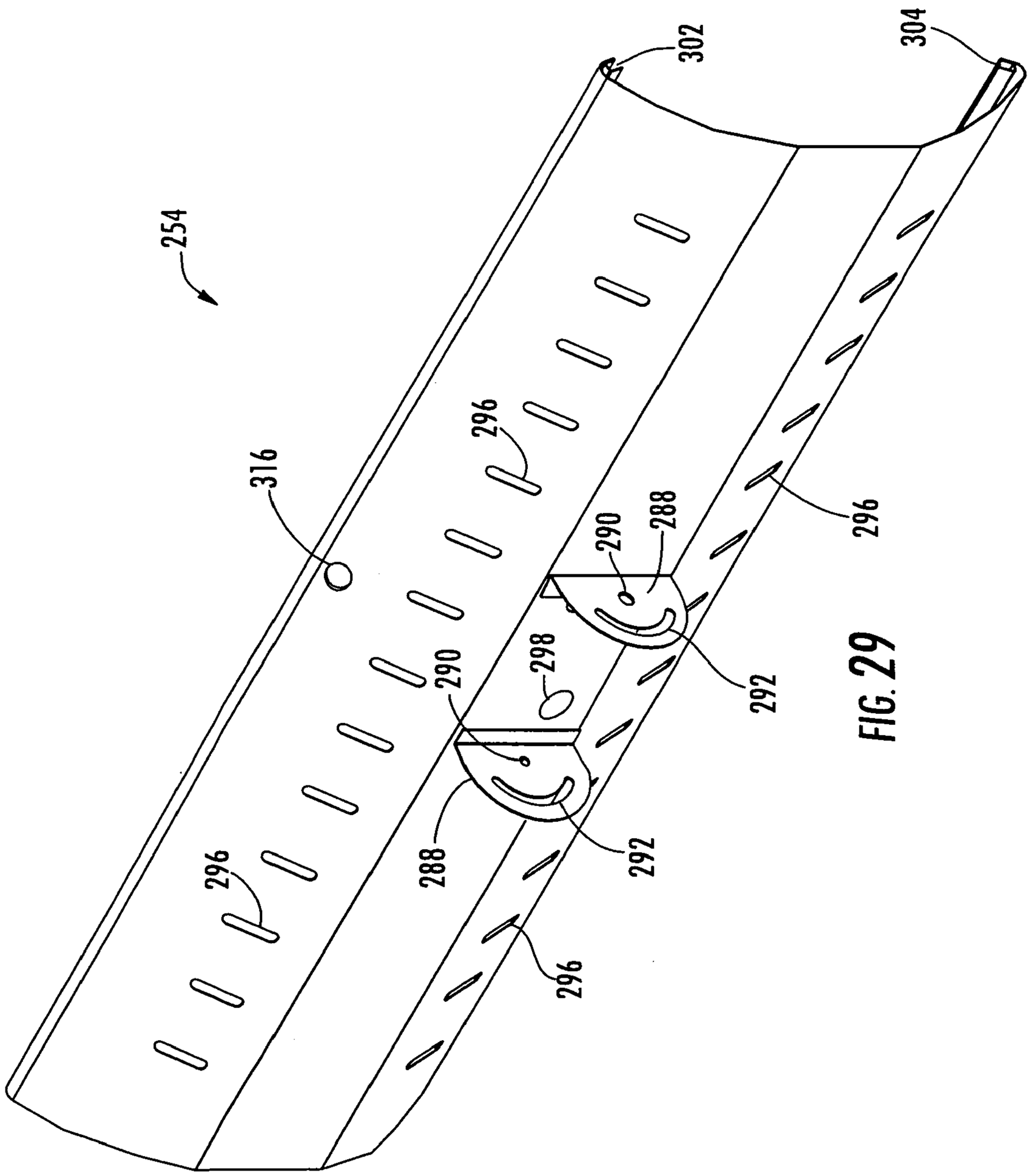

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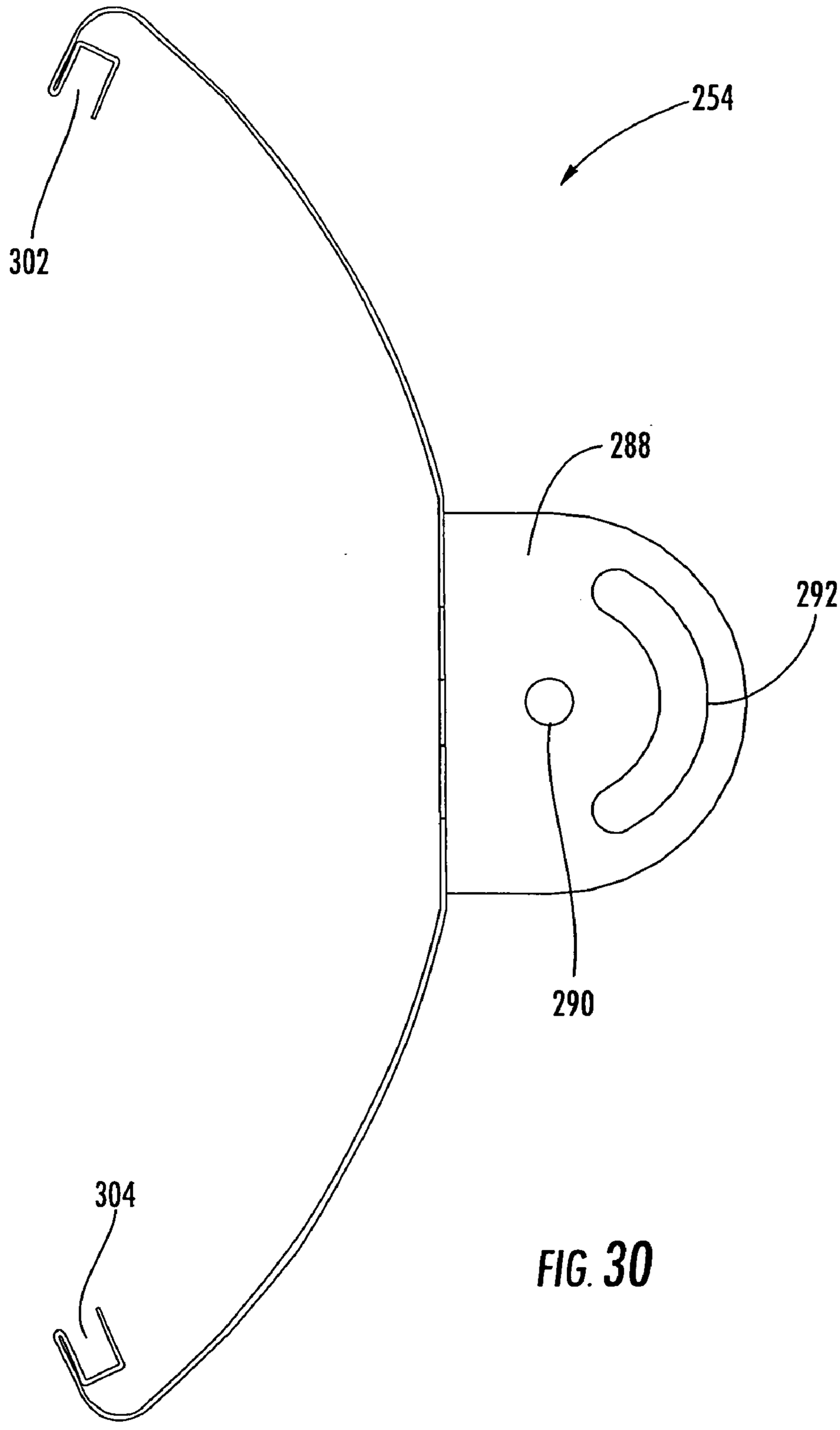

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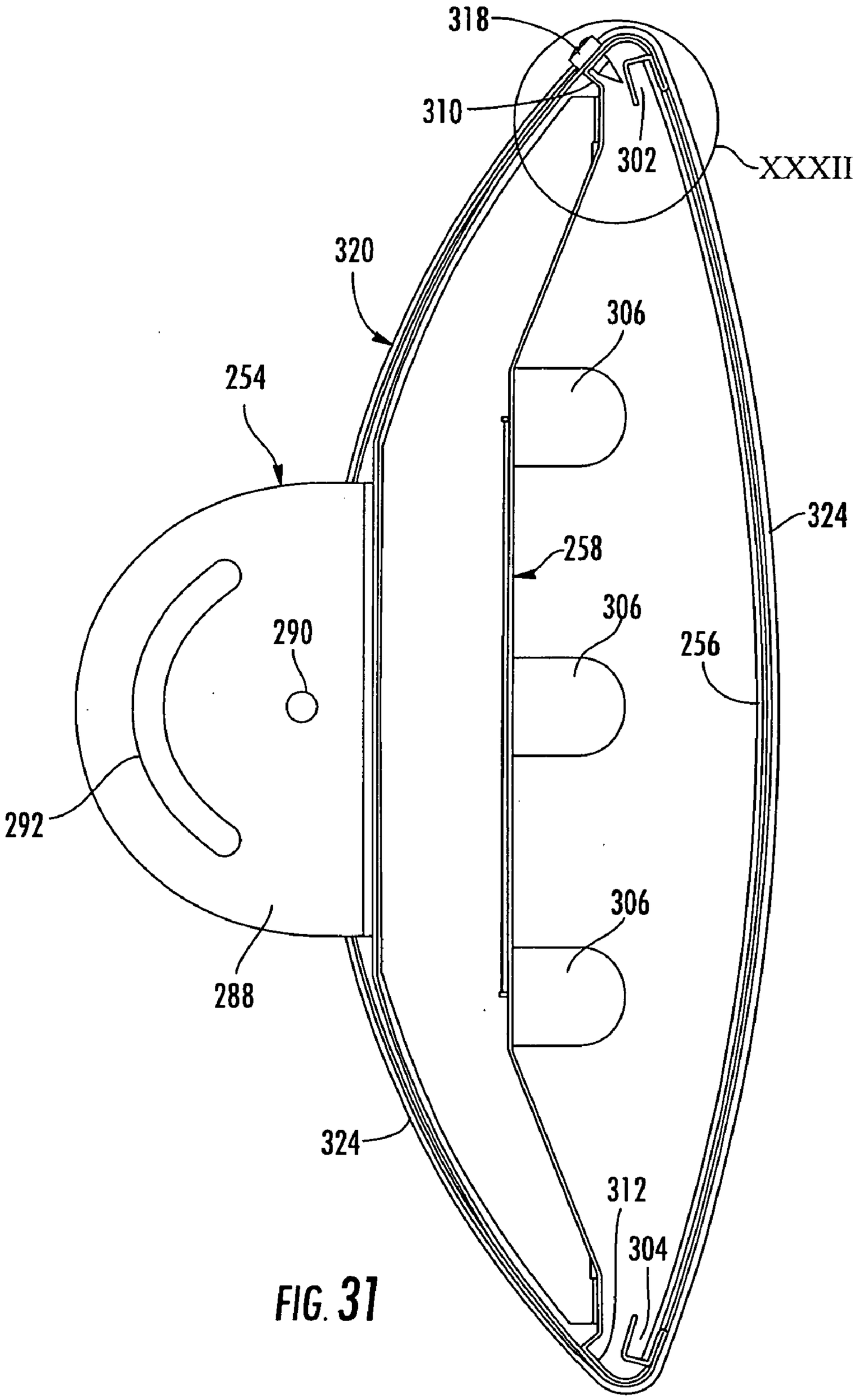
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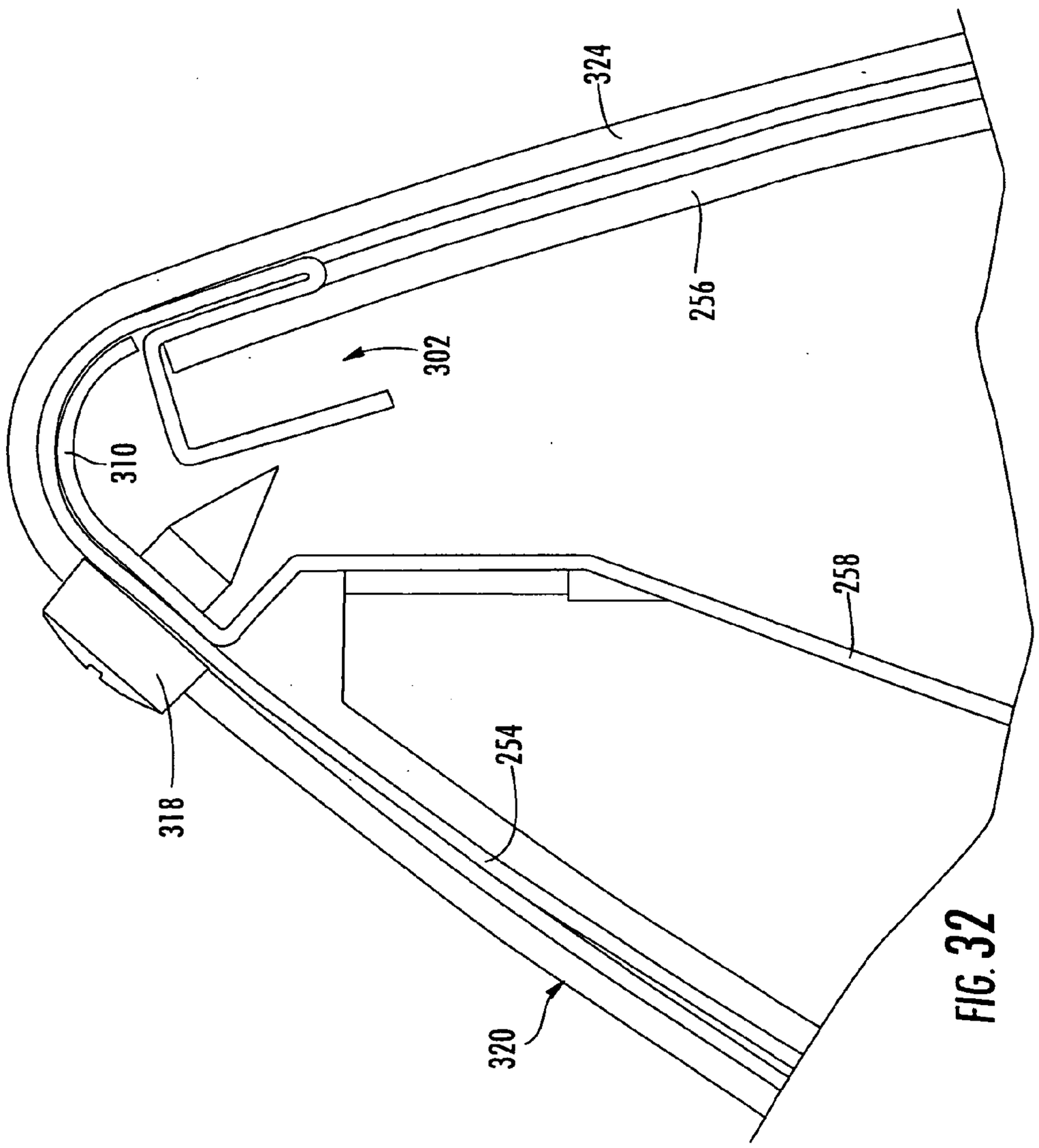

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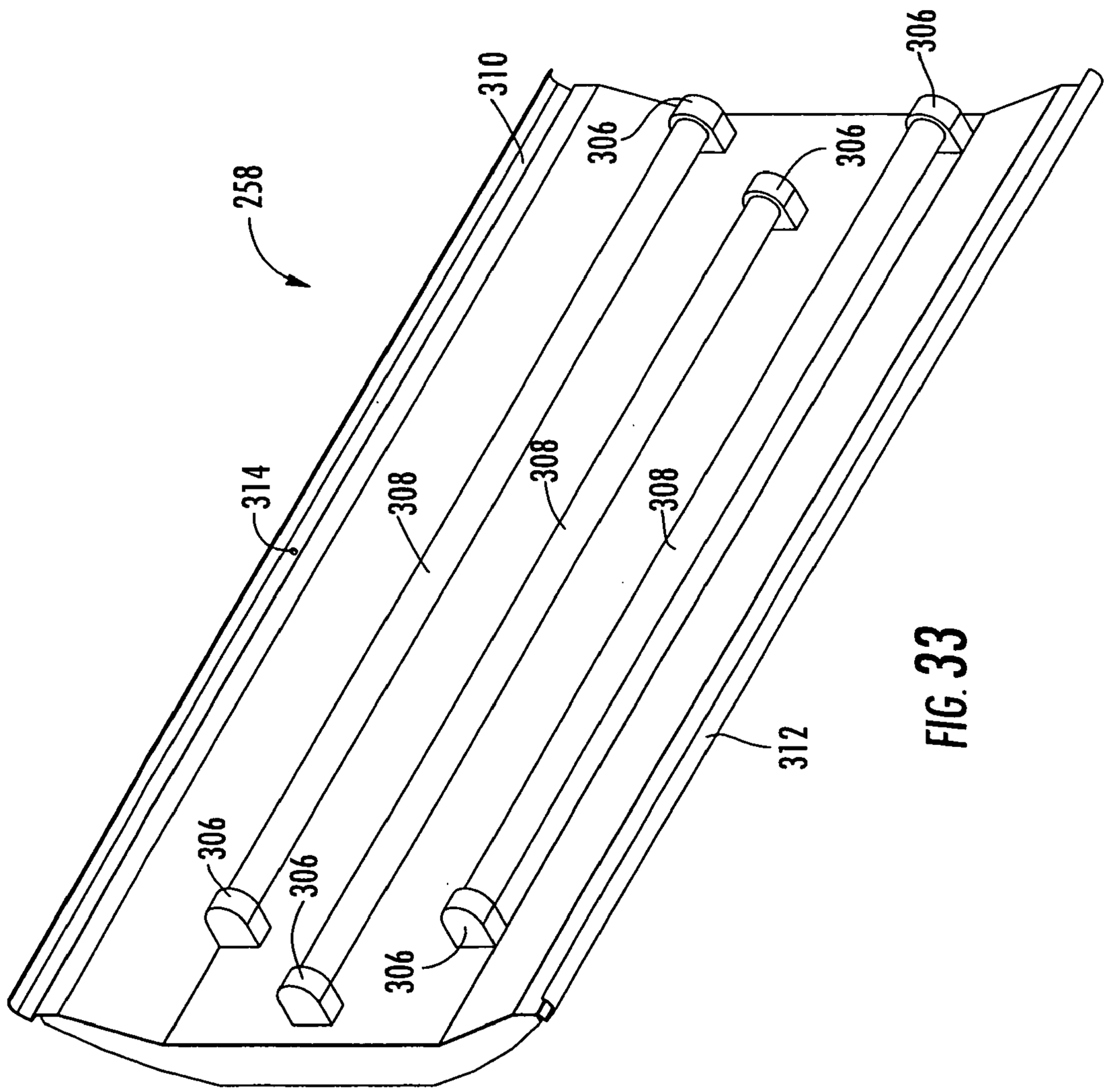

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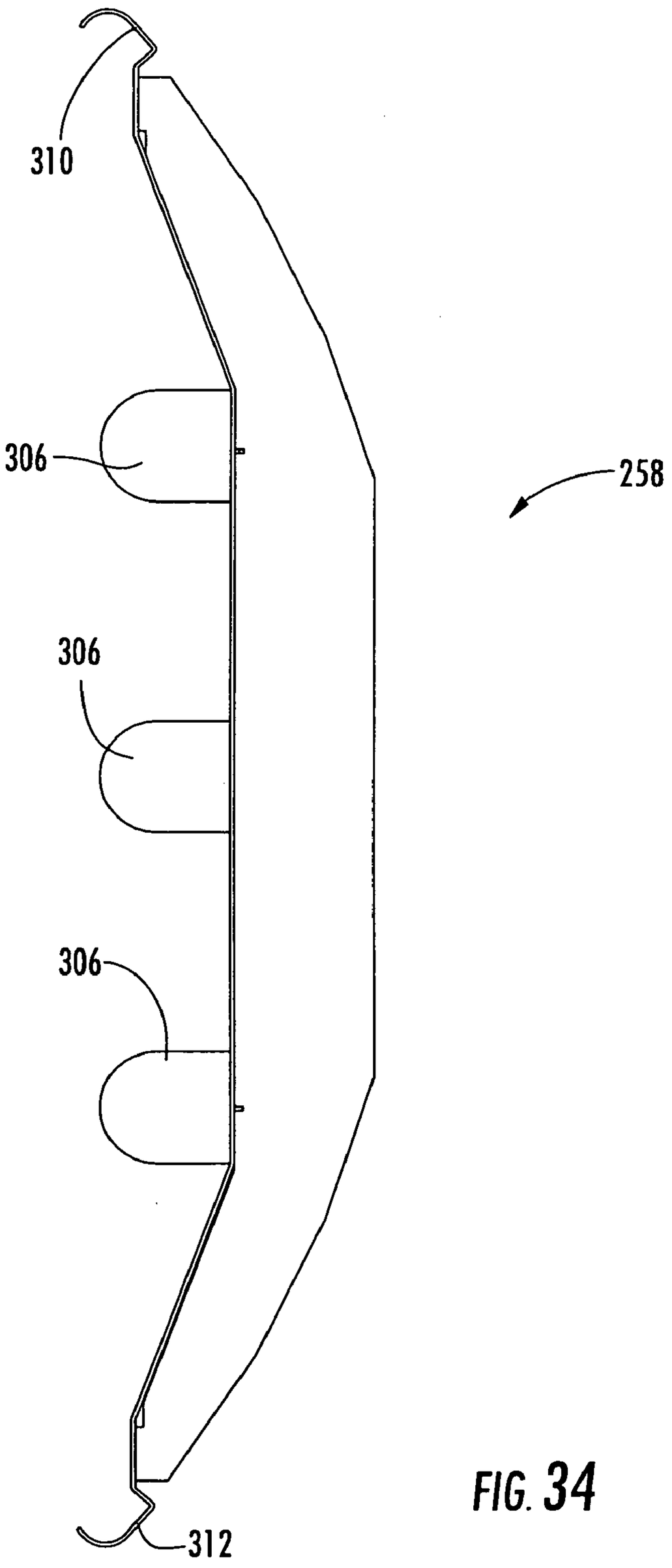

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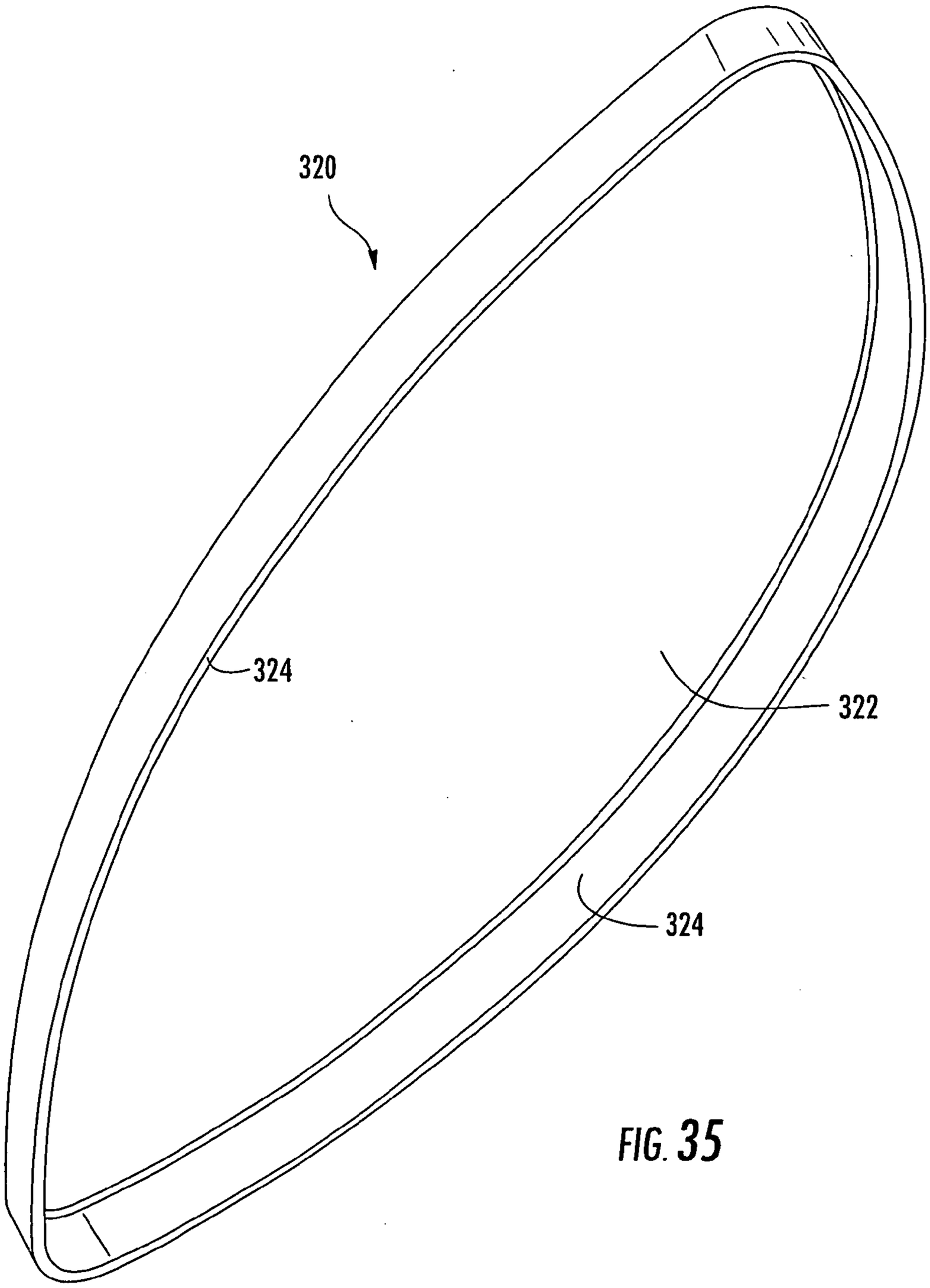

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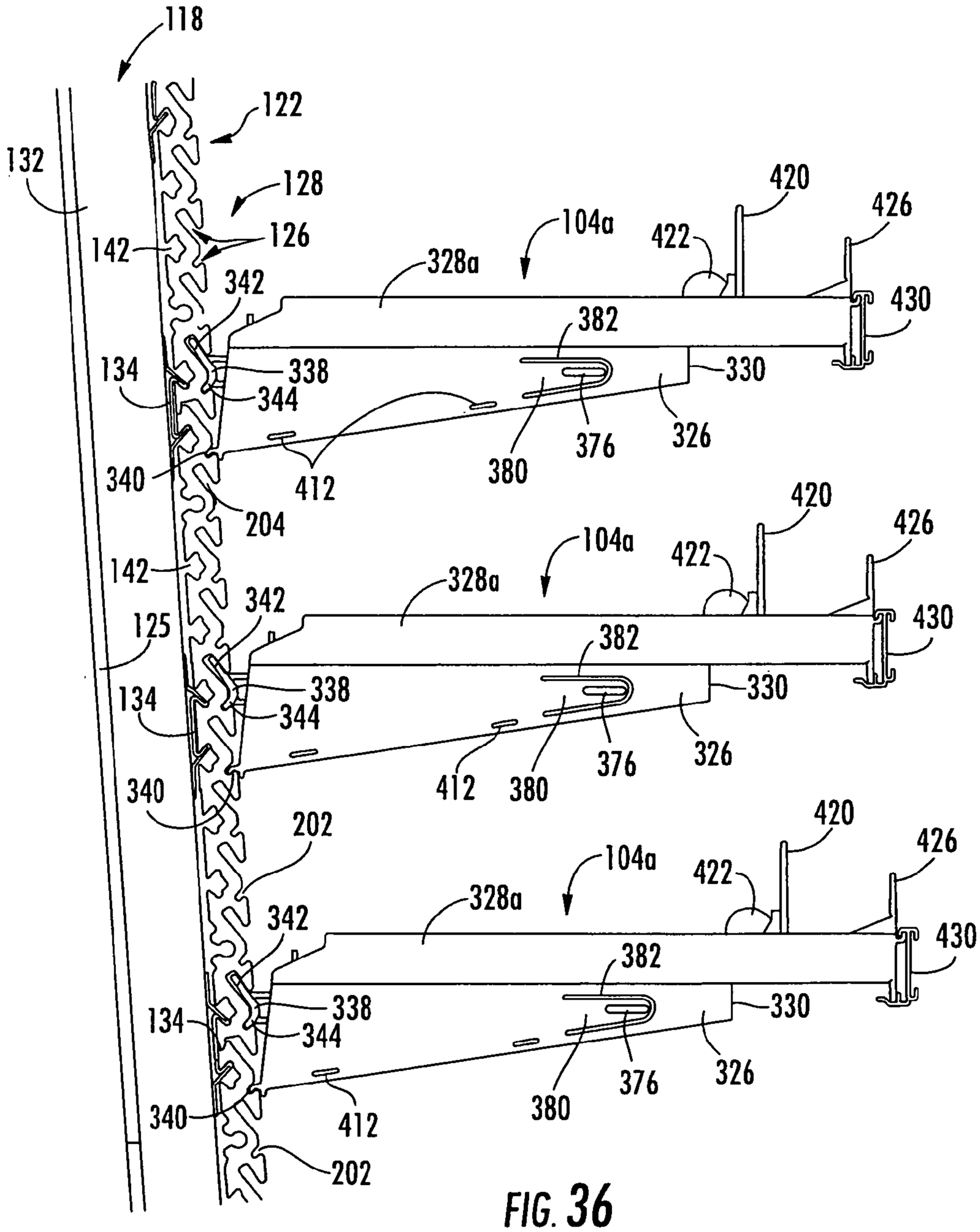
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FIG. 36

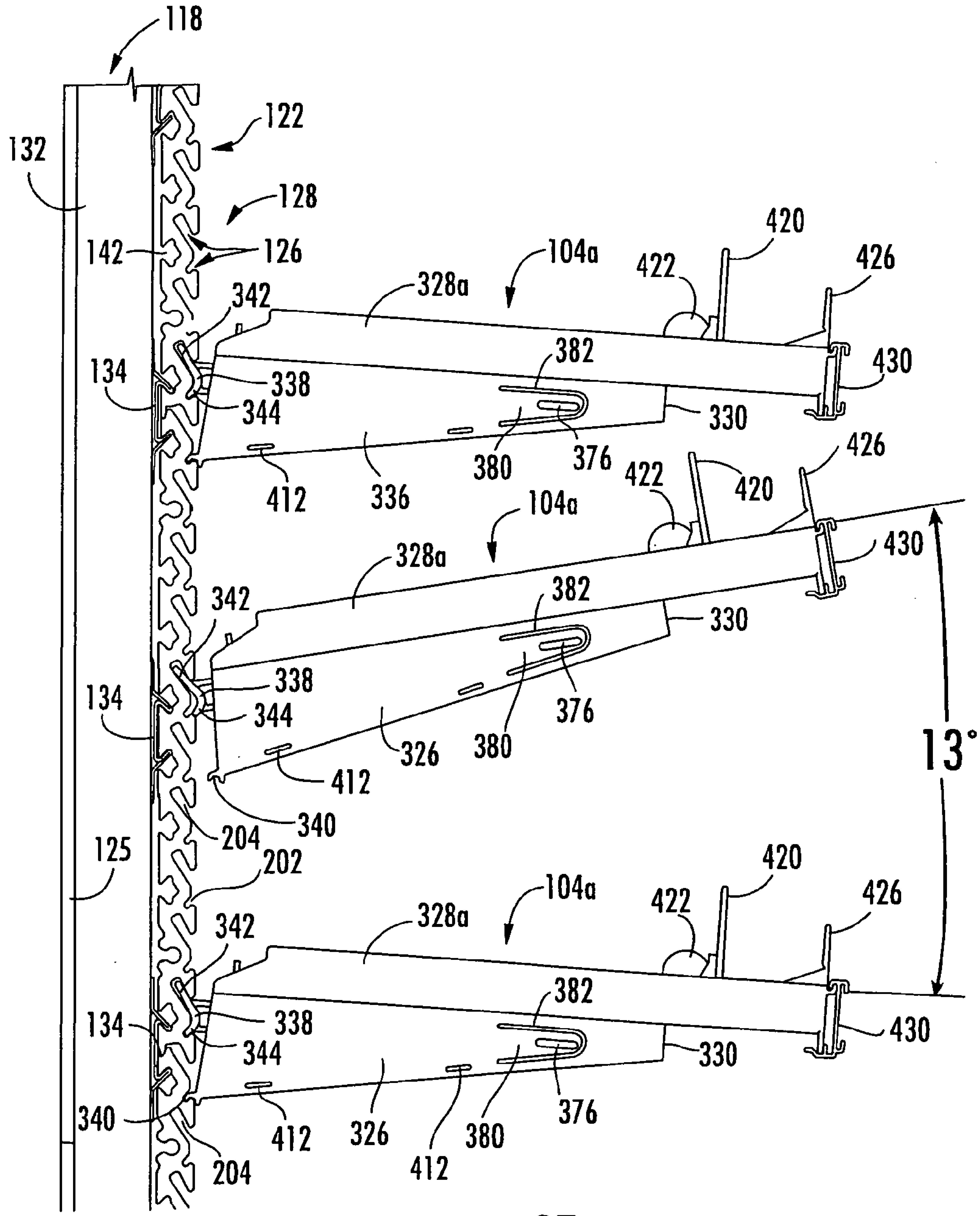
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FIG. 37

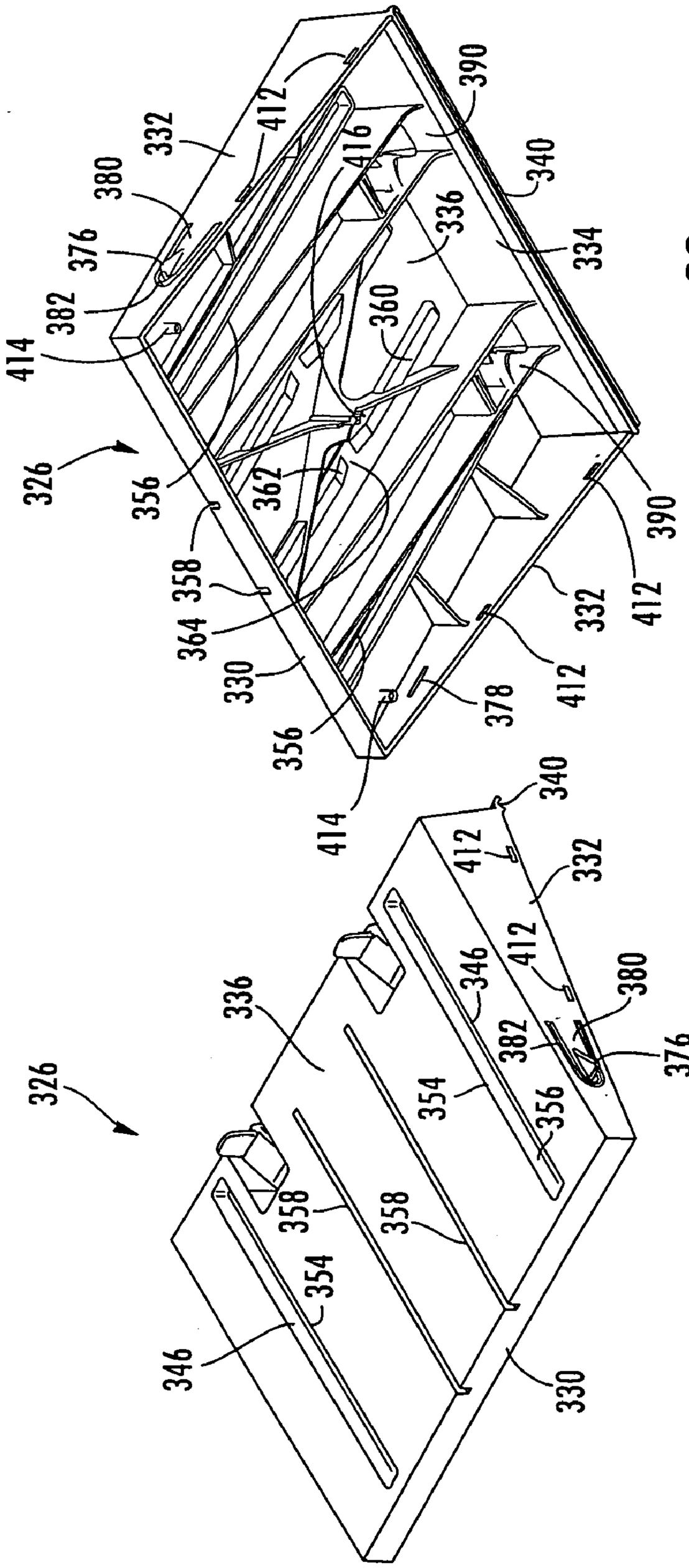
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FIG. 39

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FIG. 38

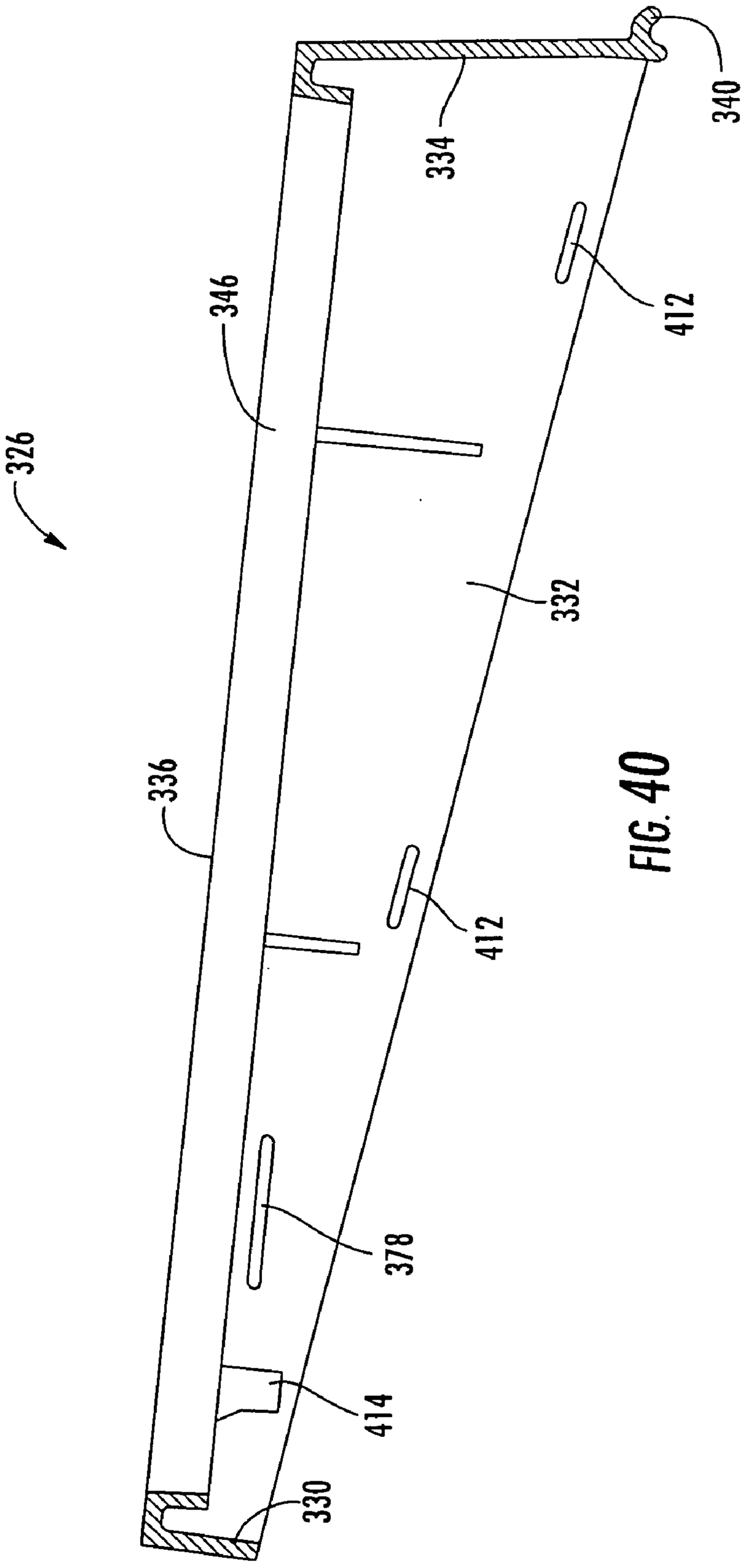

FIG. 40

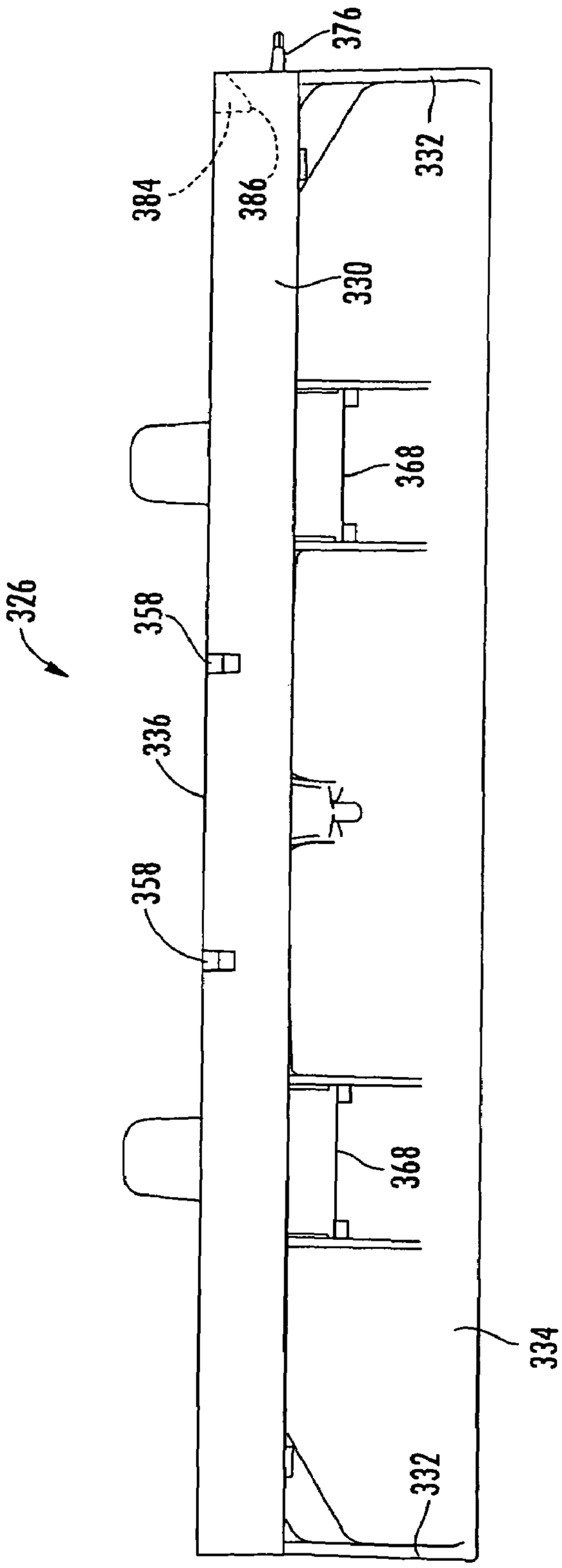

FIG. 41

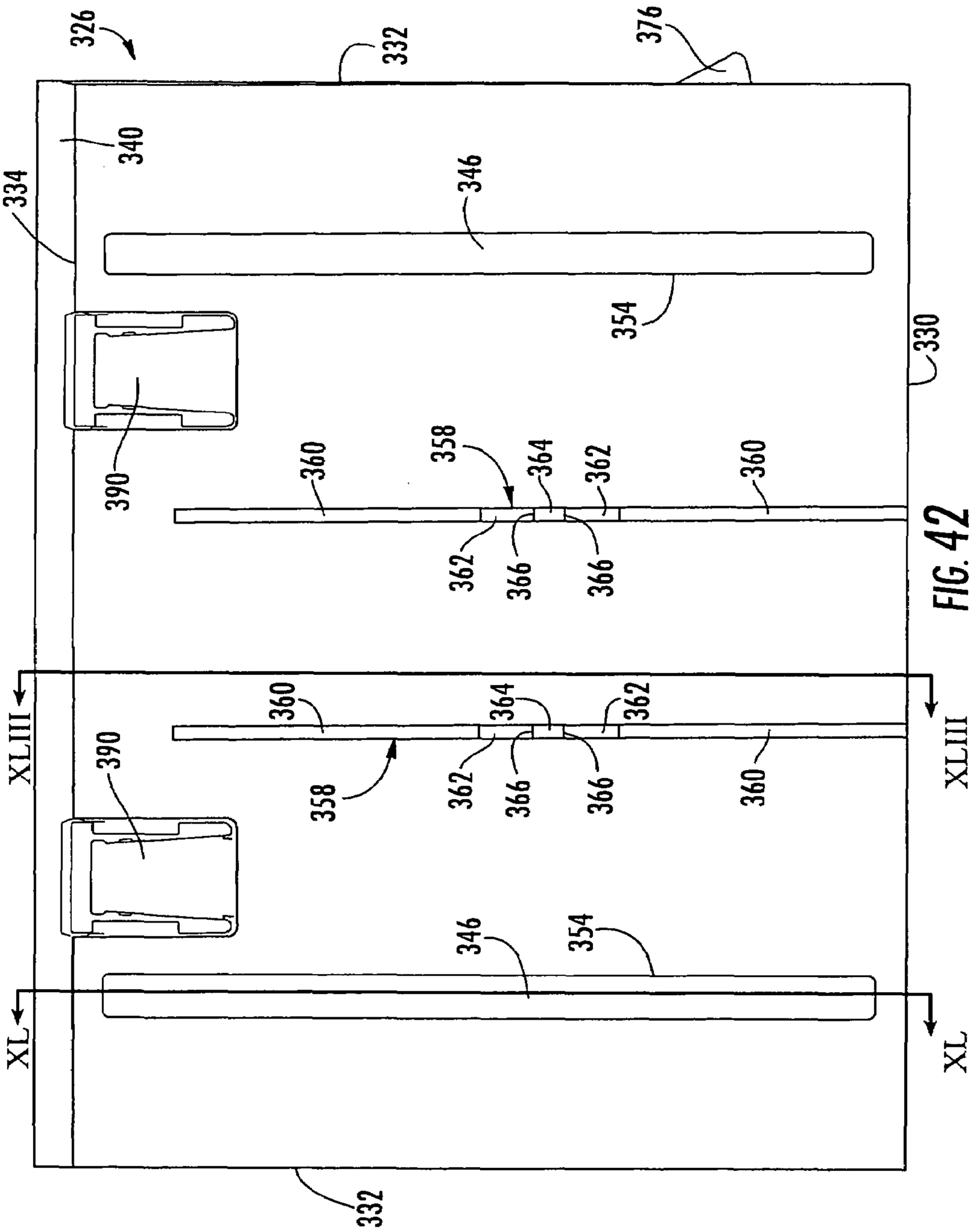
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FIG. 42

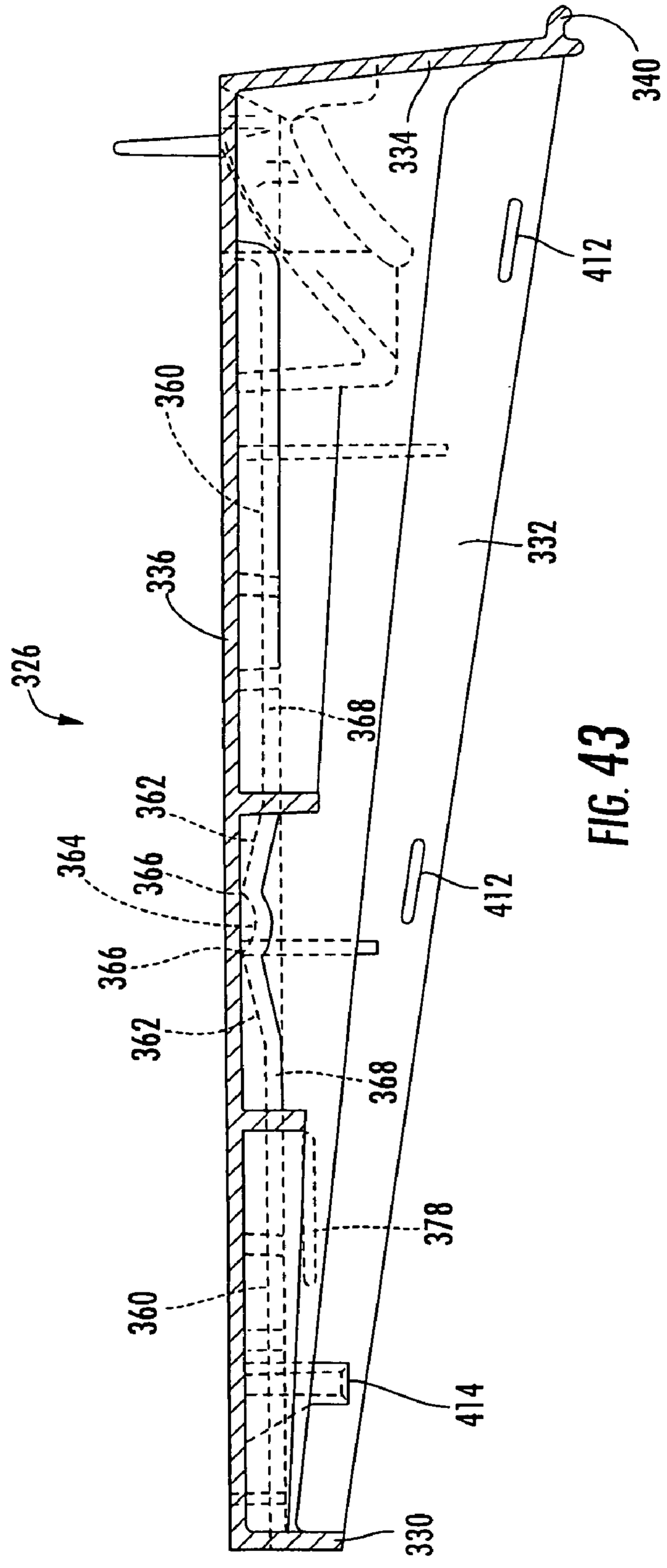
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FIG. 43

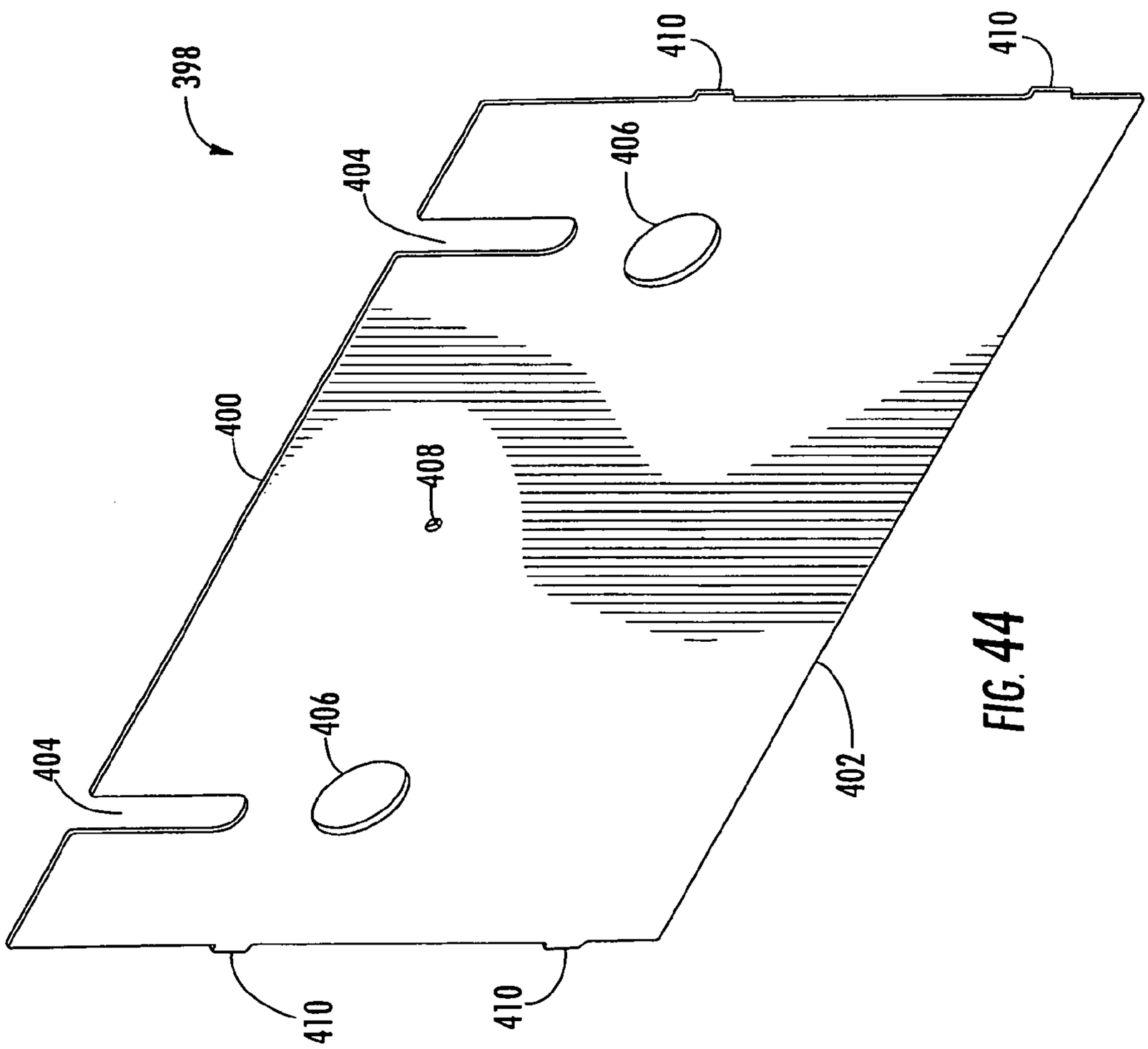

FIG. 44

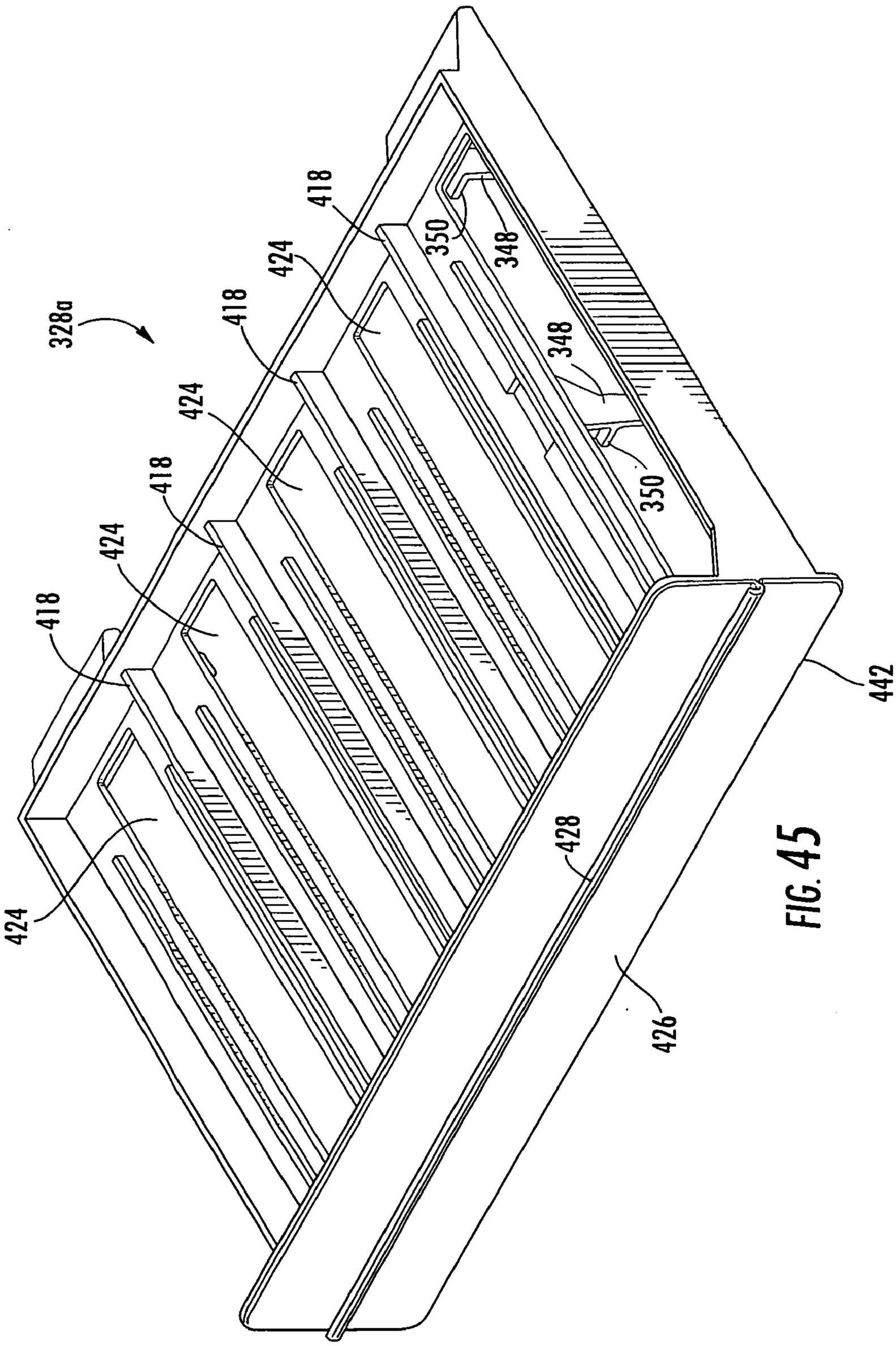

FIG. 45

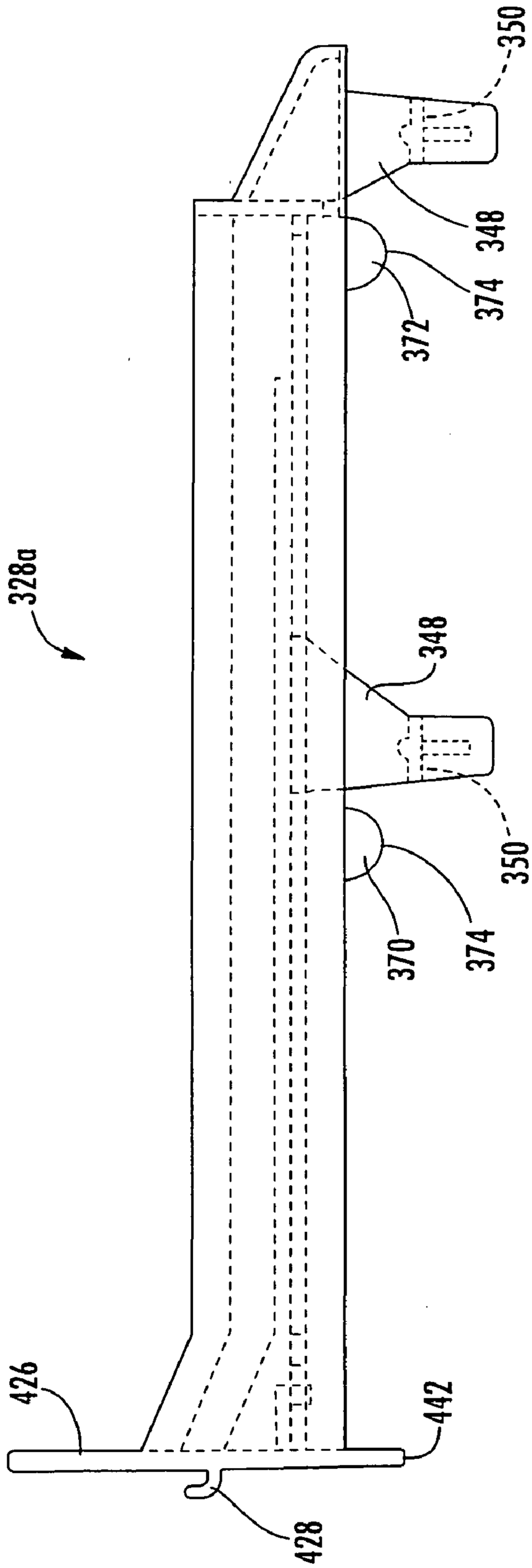

FIG. 46

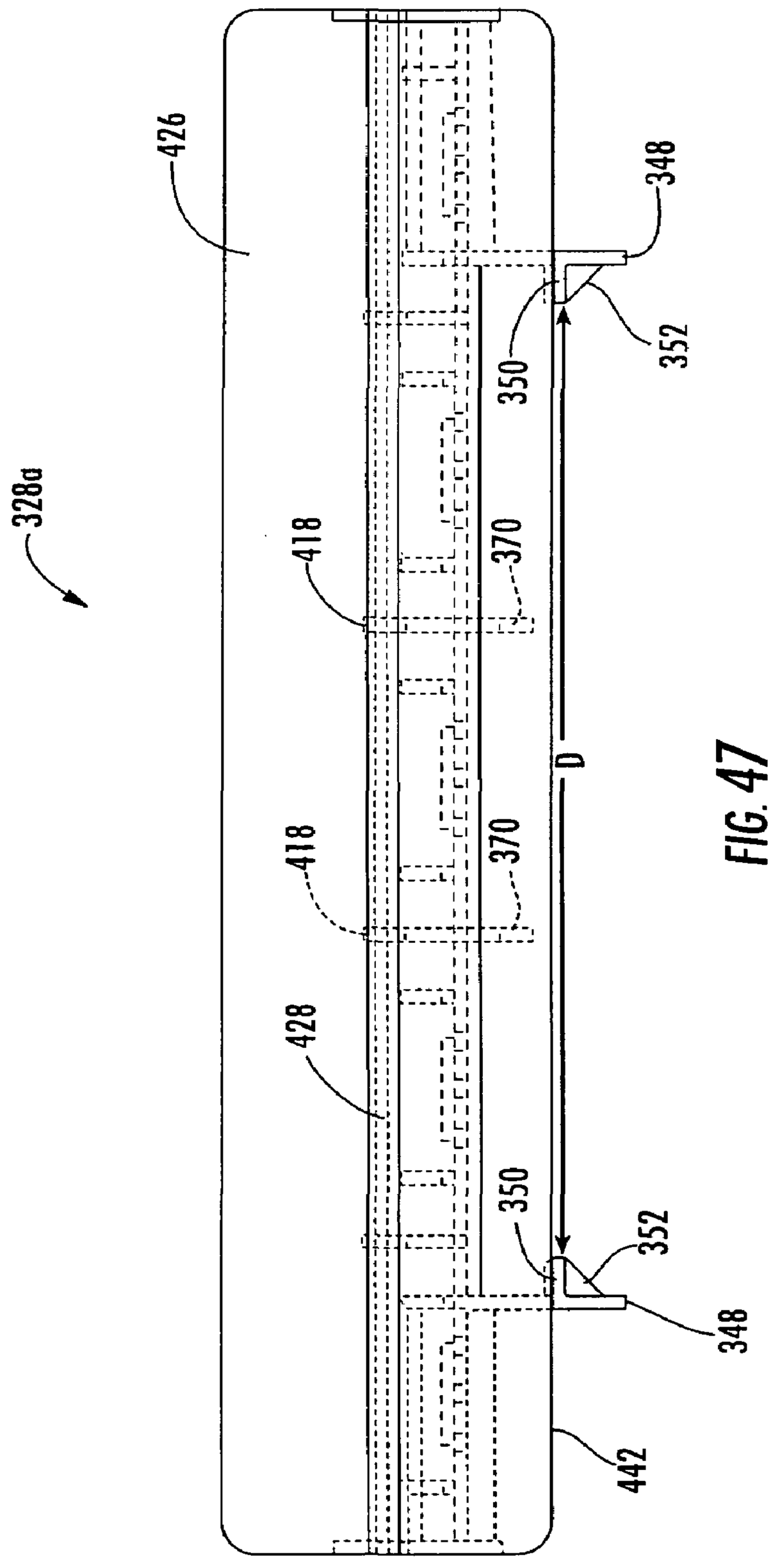

FIG. 47

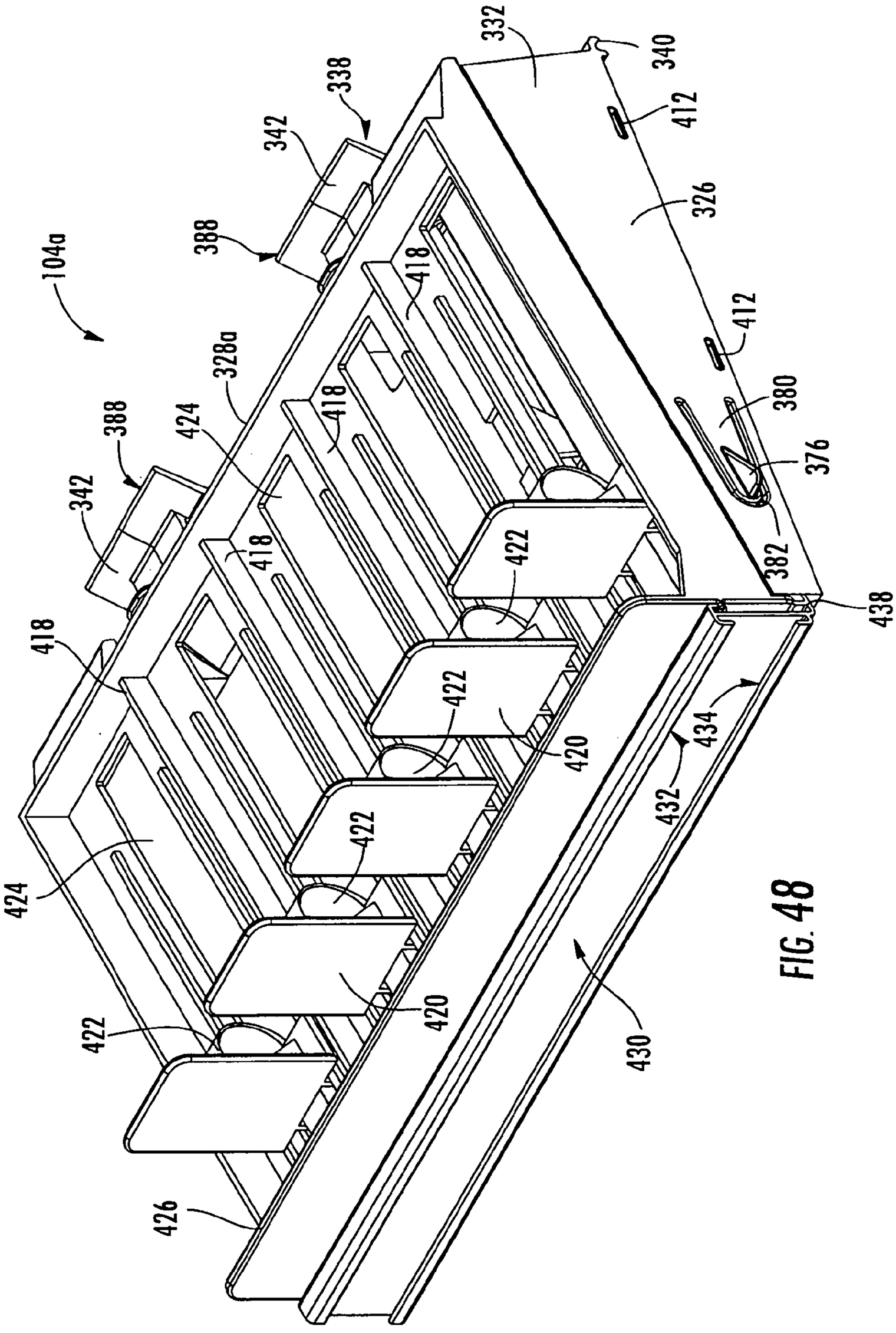
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FIG. 48

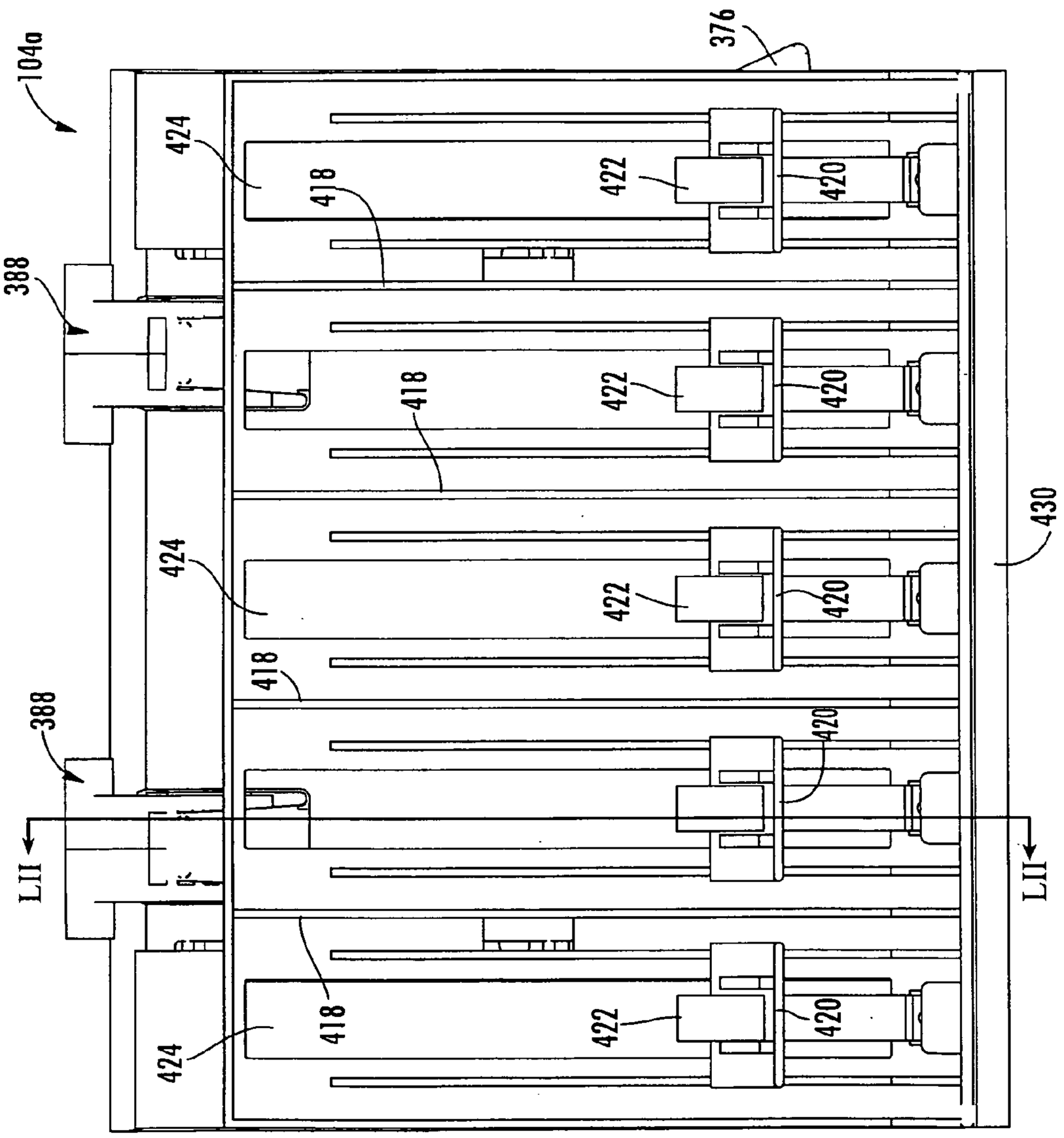
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FIG. 49

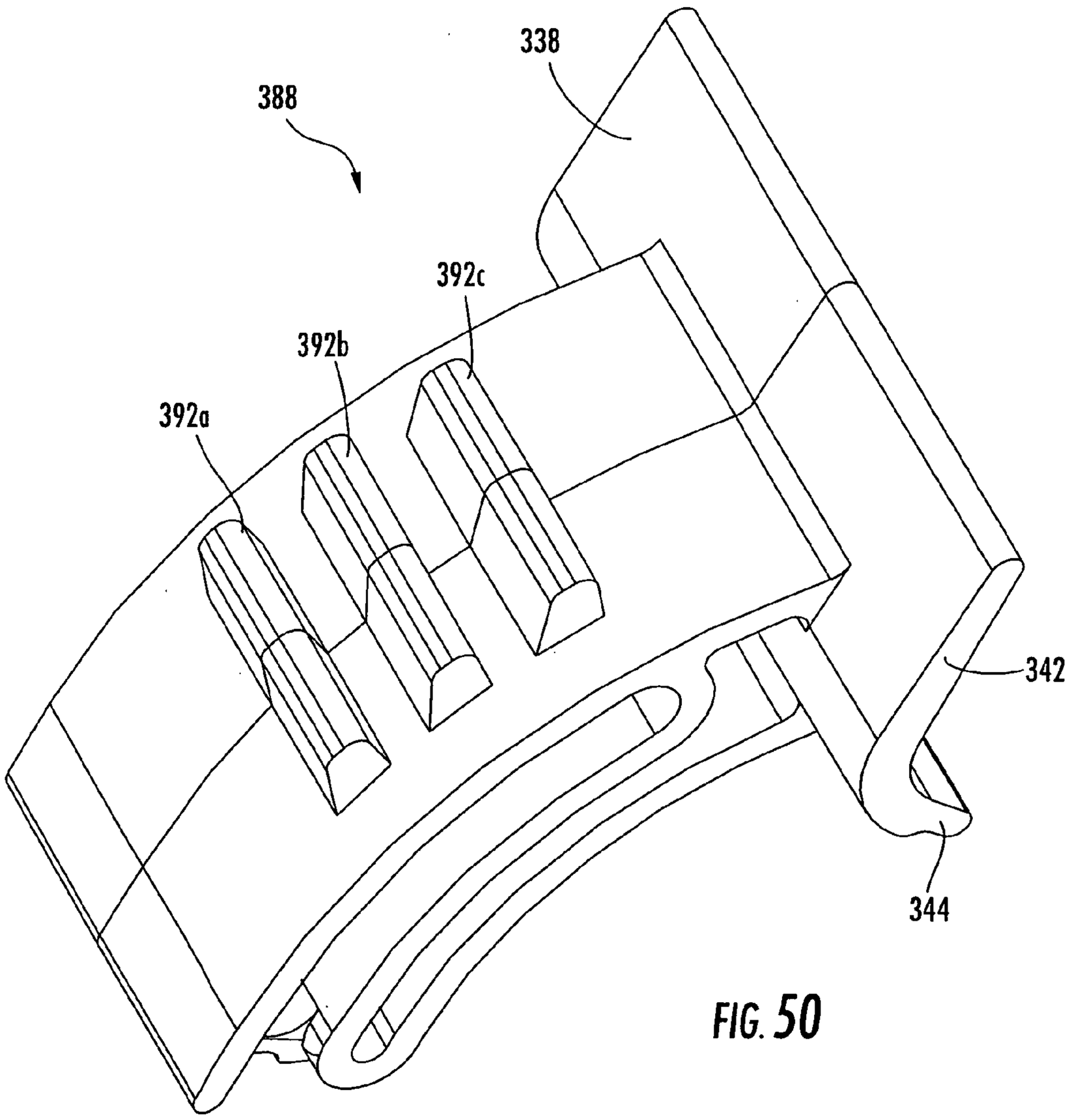

FIG. 50

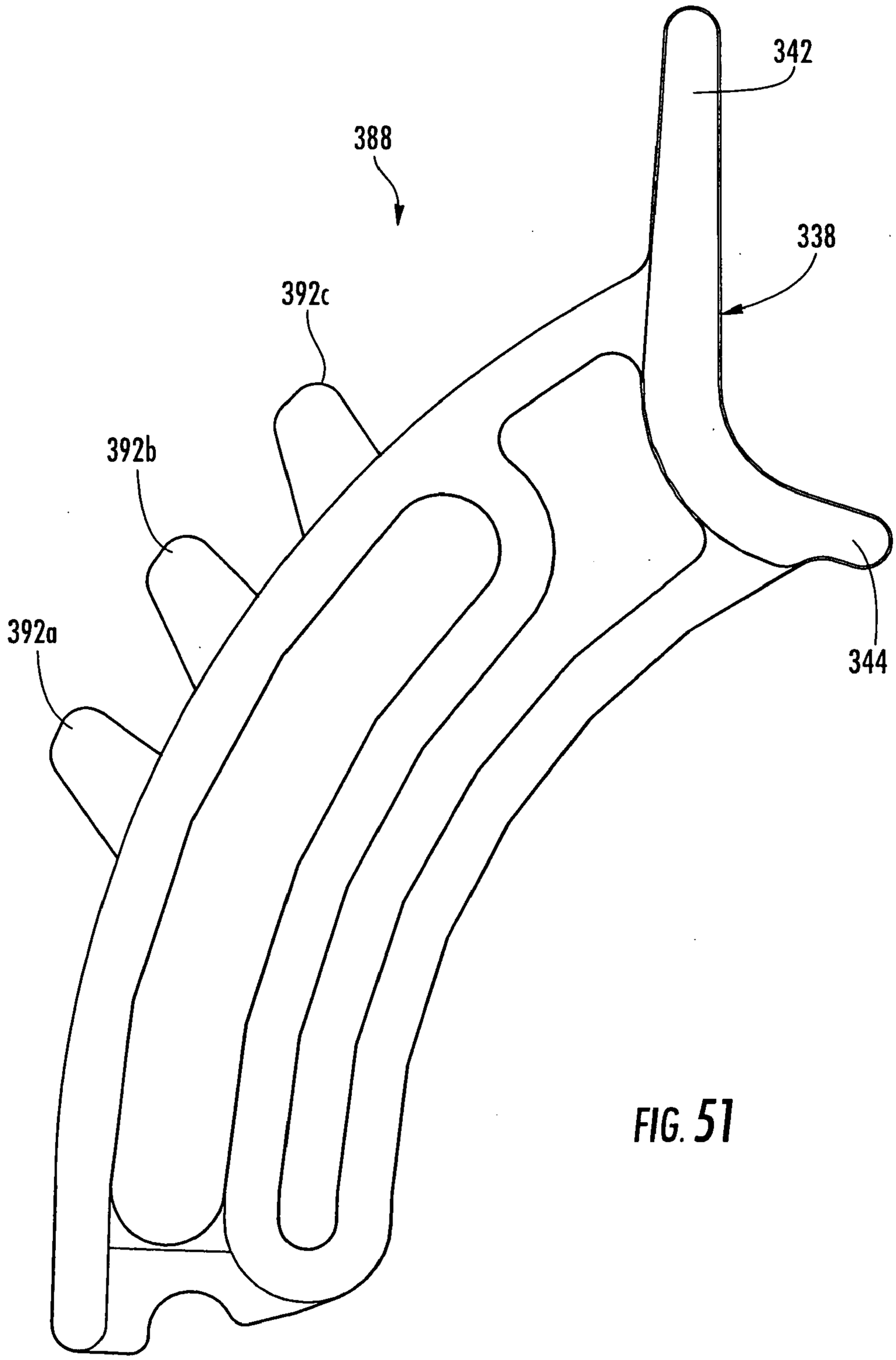

FIG. 51

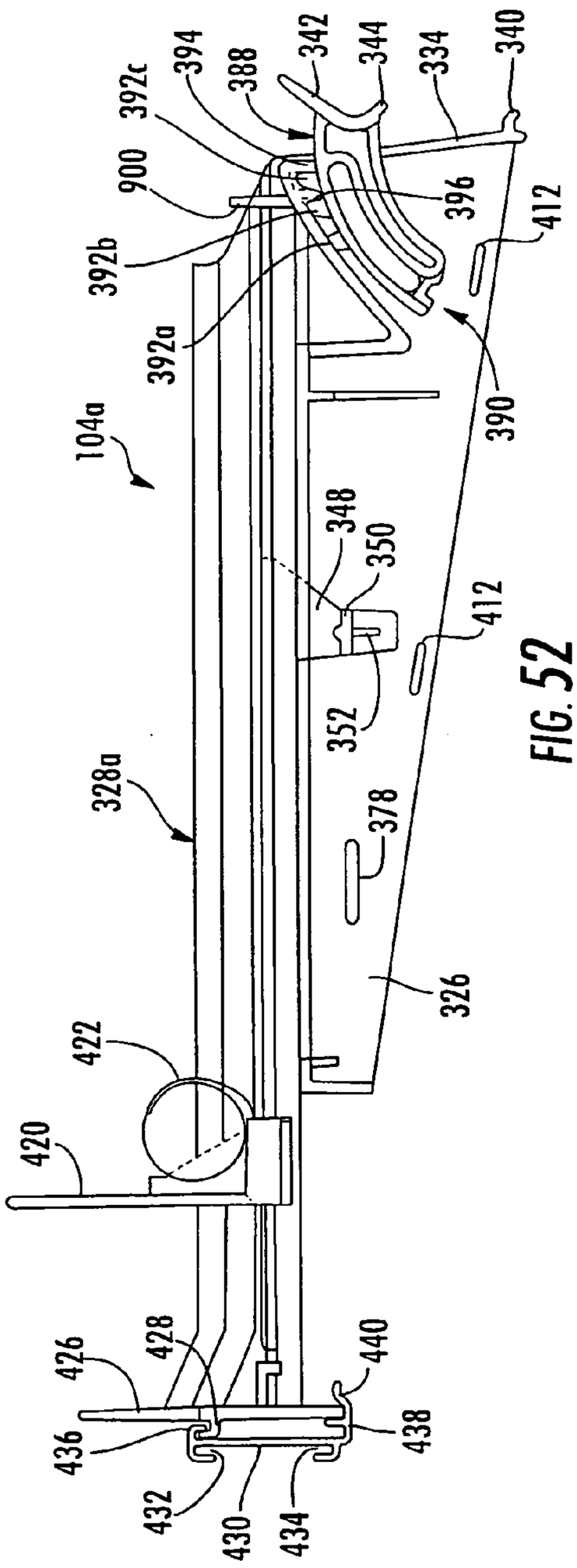
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FIG. 52

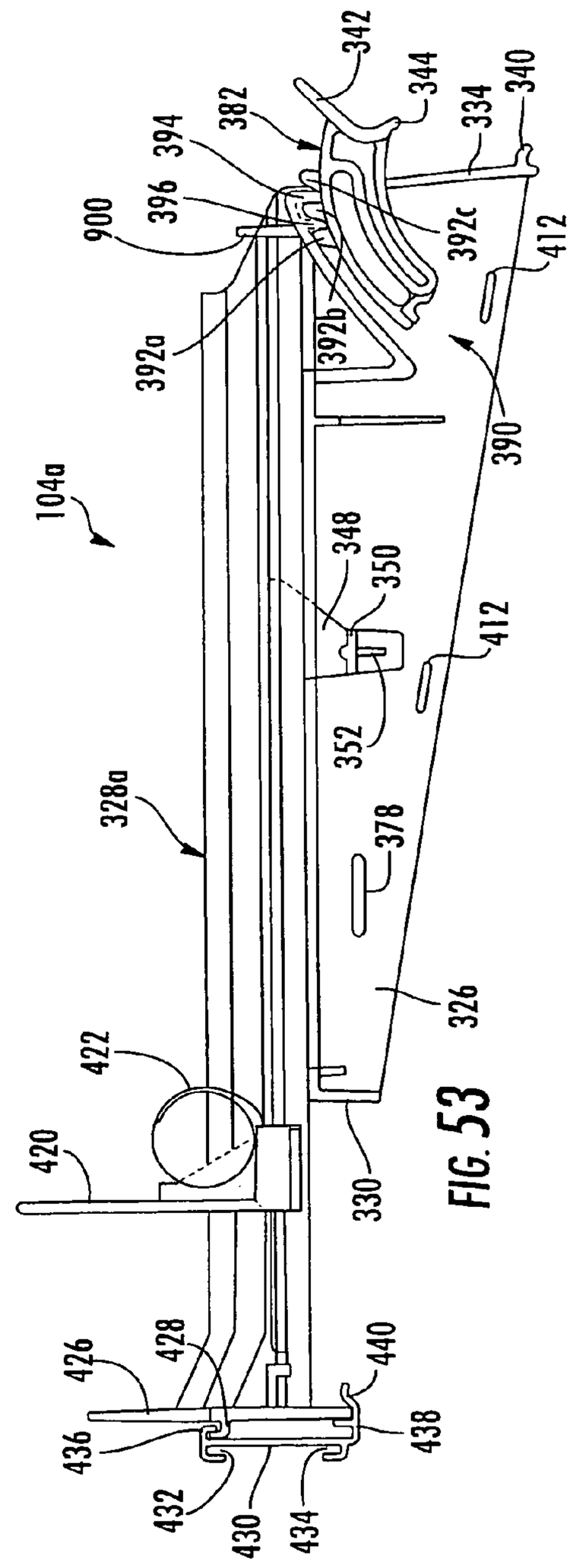
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FIG. 53

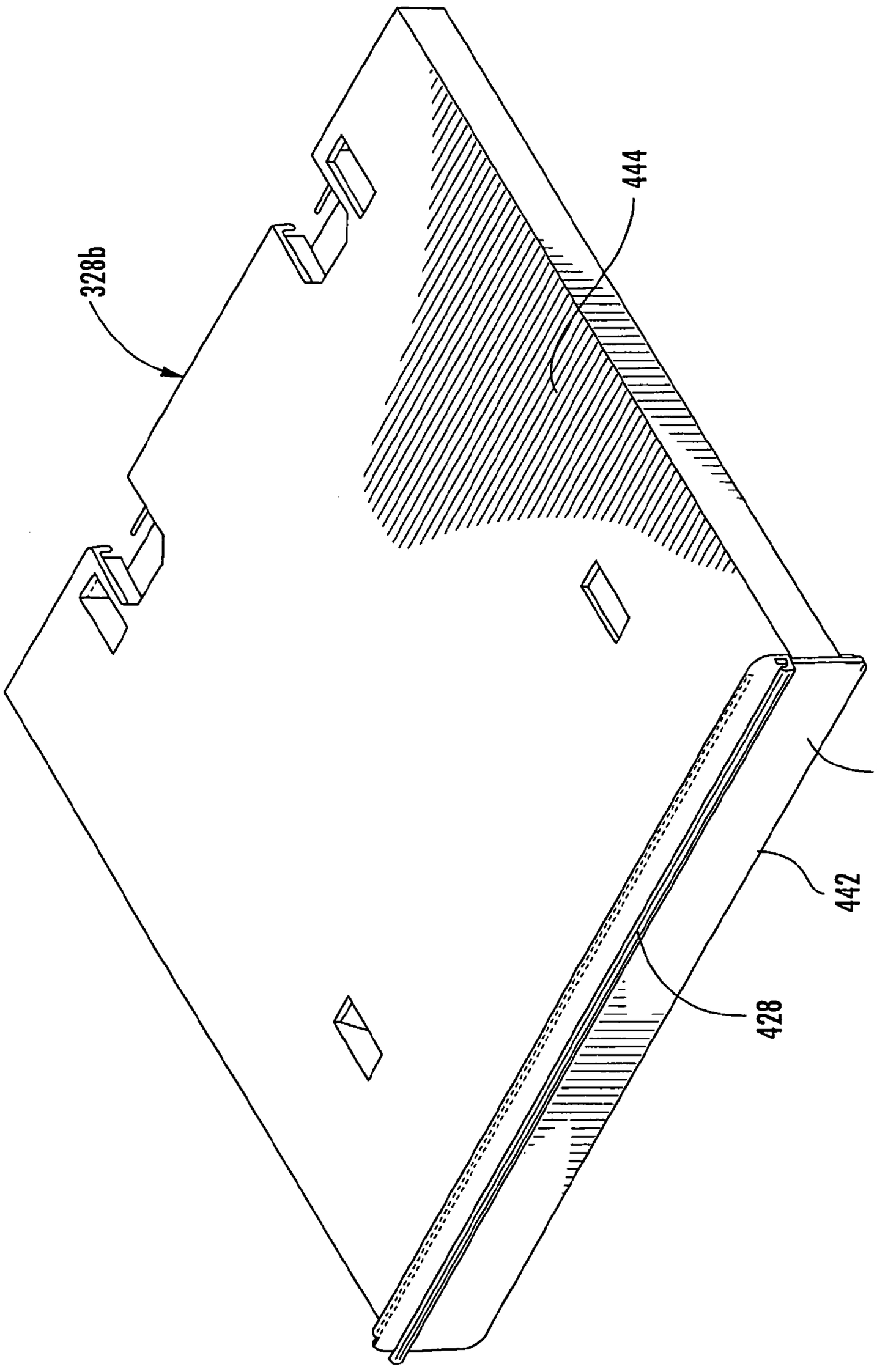

FIG. 54

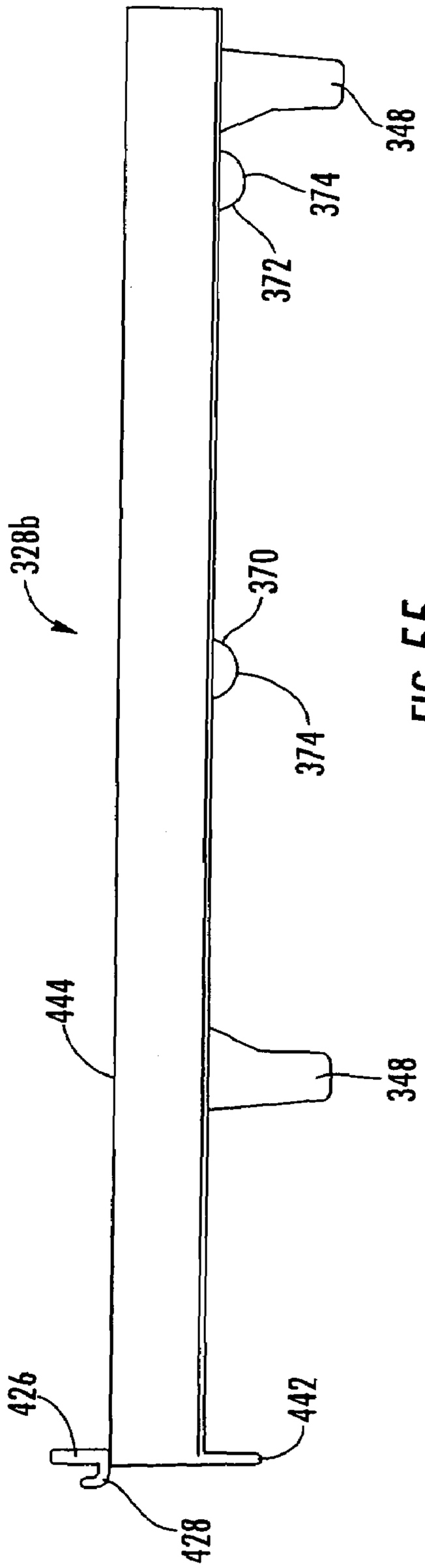

FIG. 55

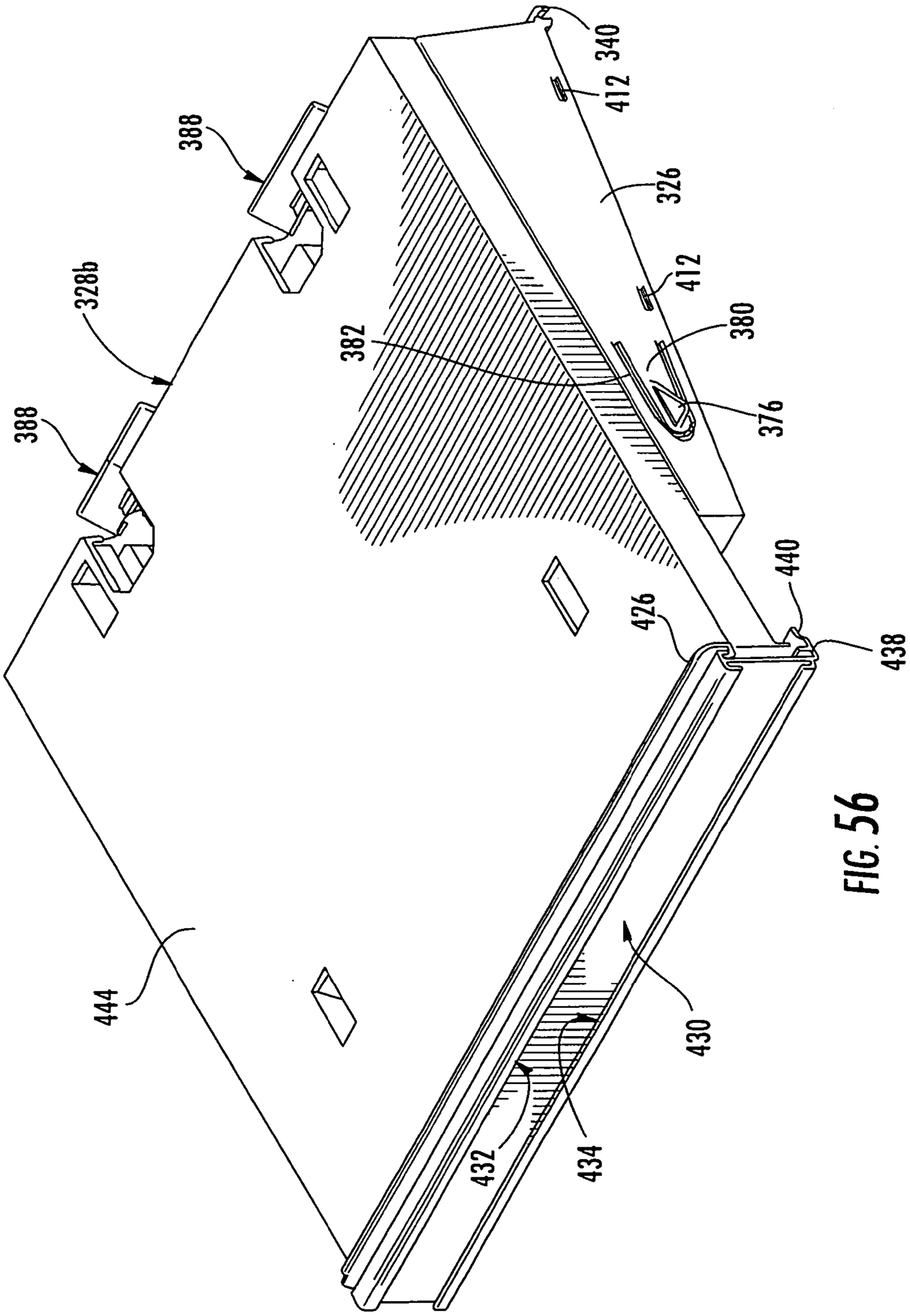
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FIG. 56

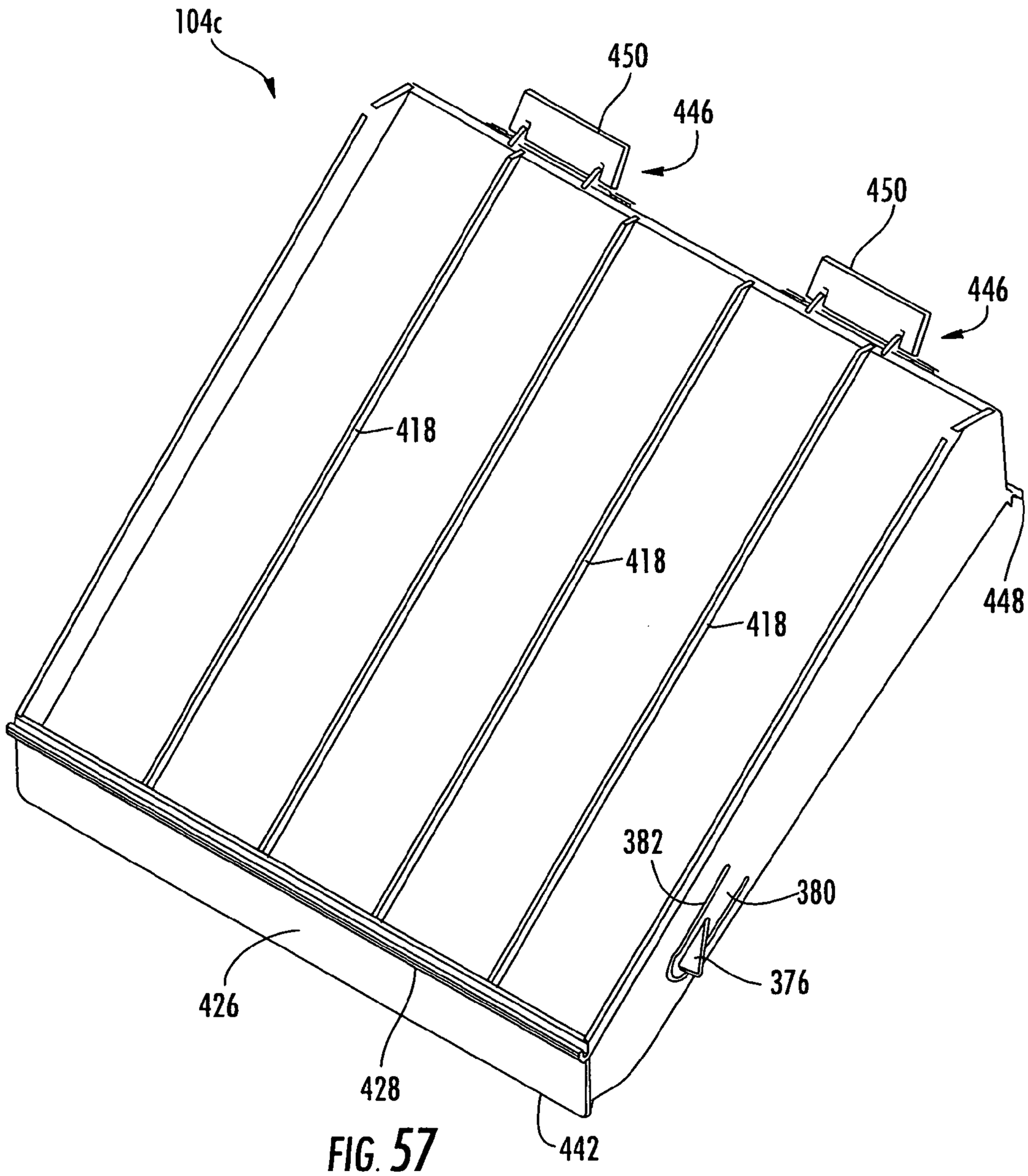

FIG. 57

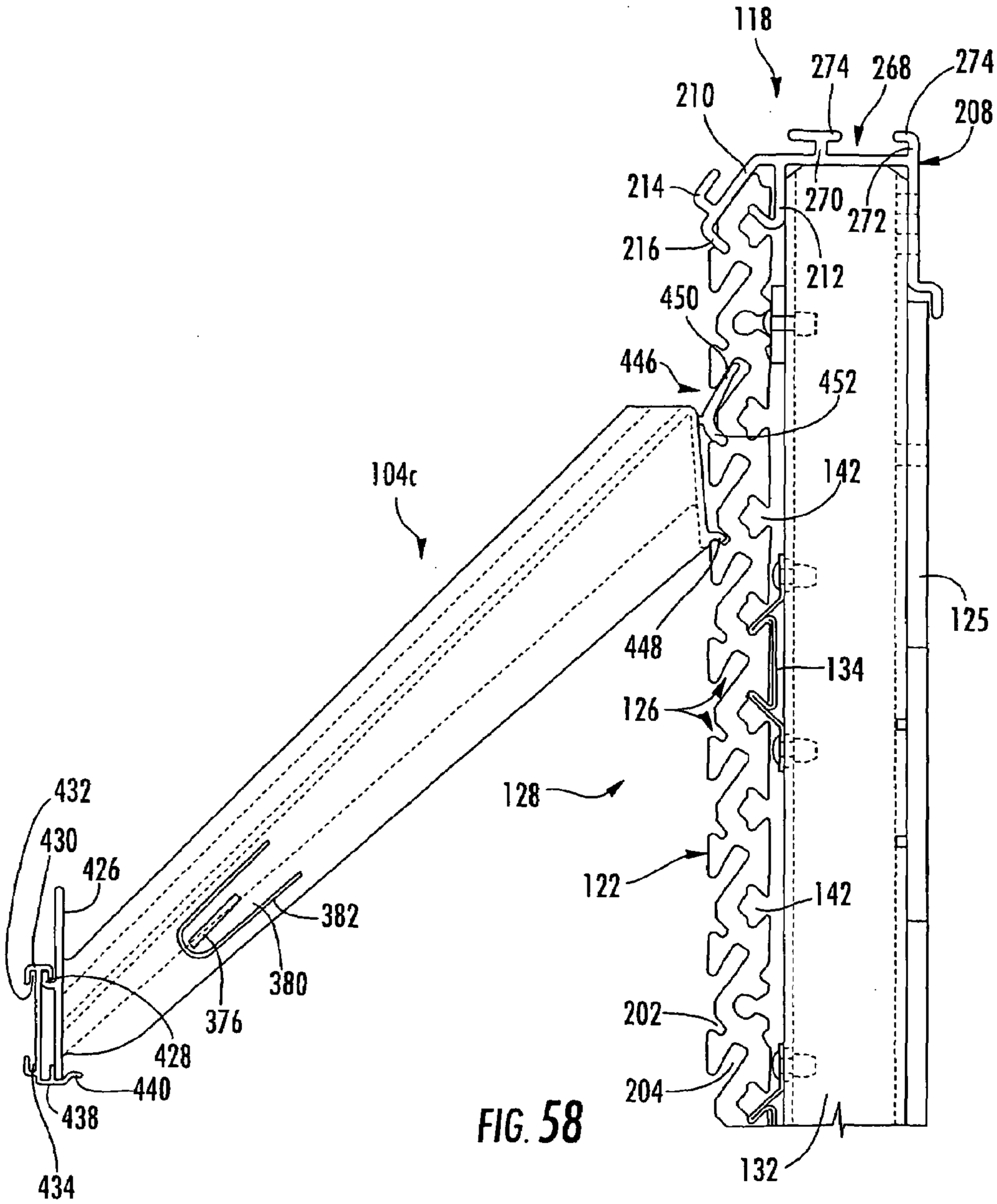
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FIG. 58

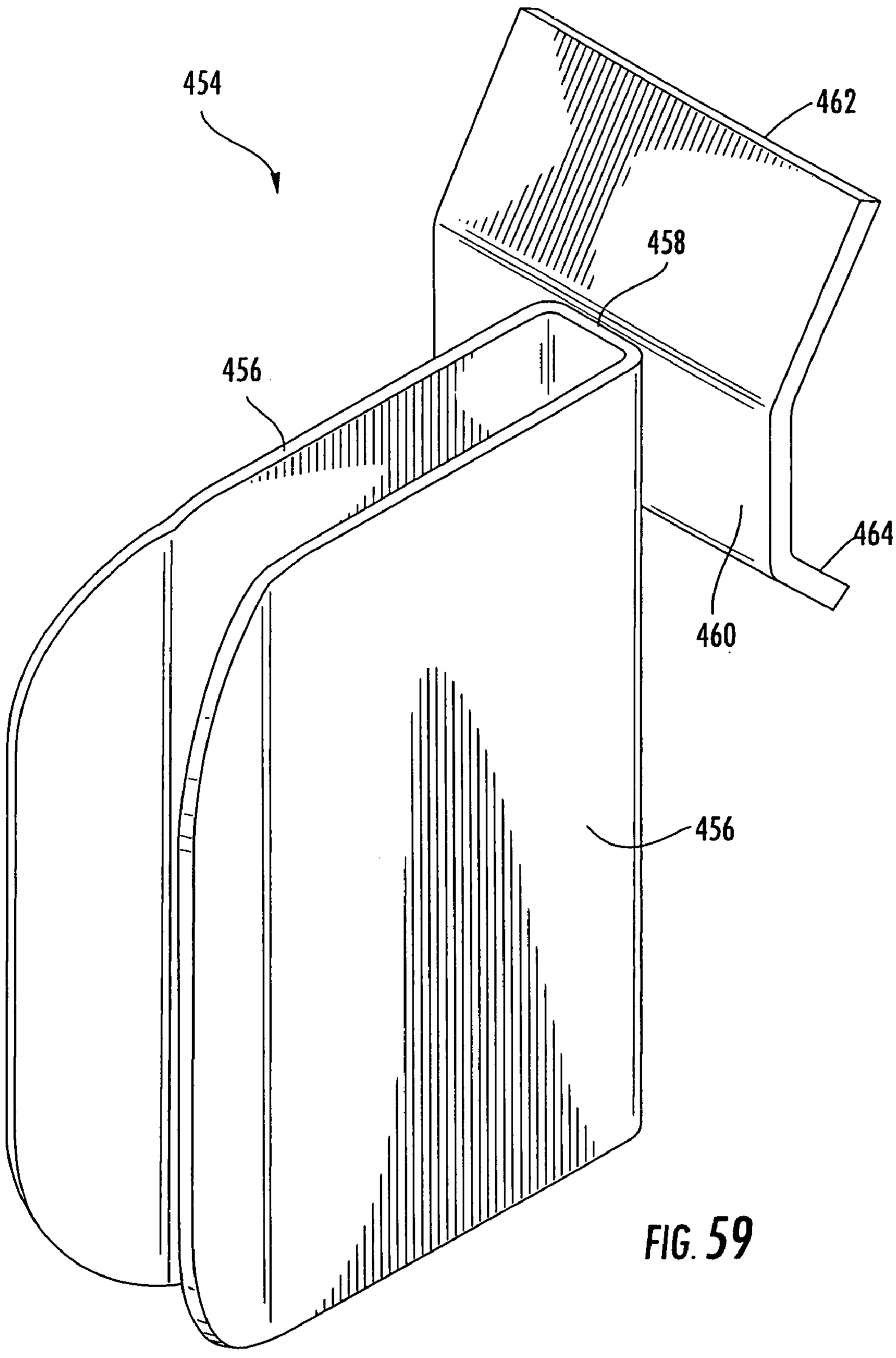

FIG. 59

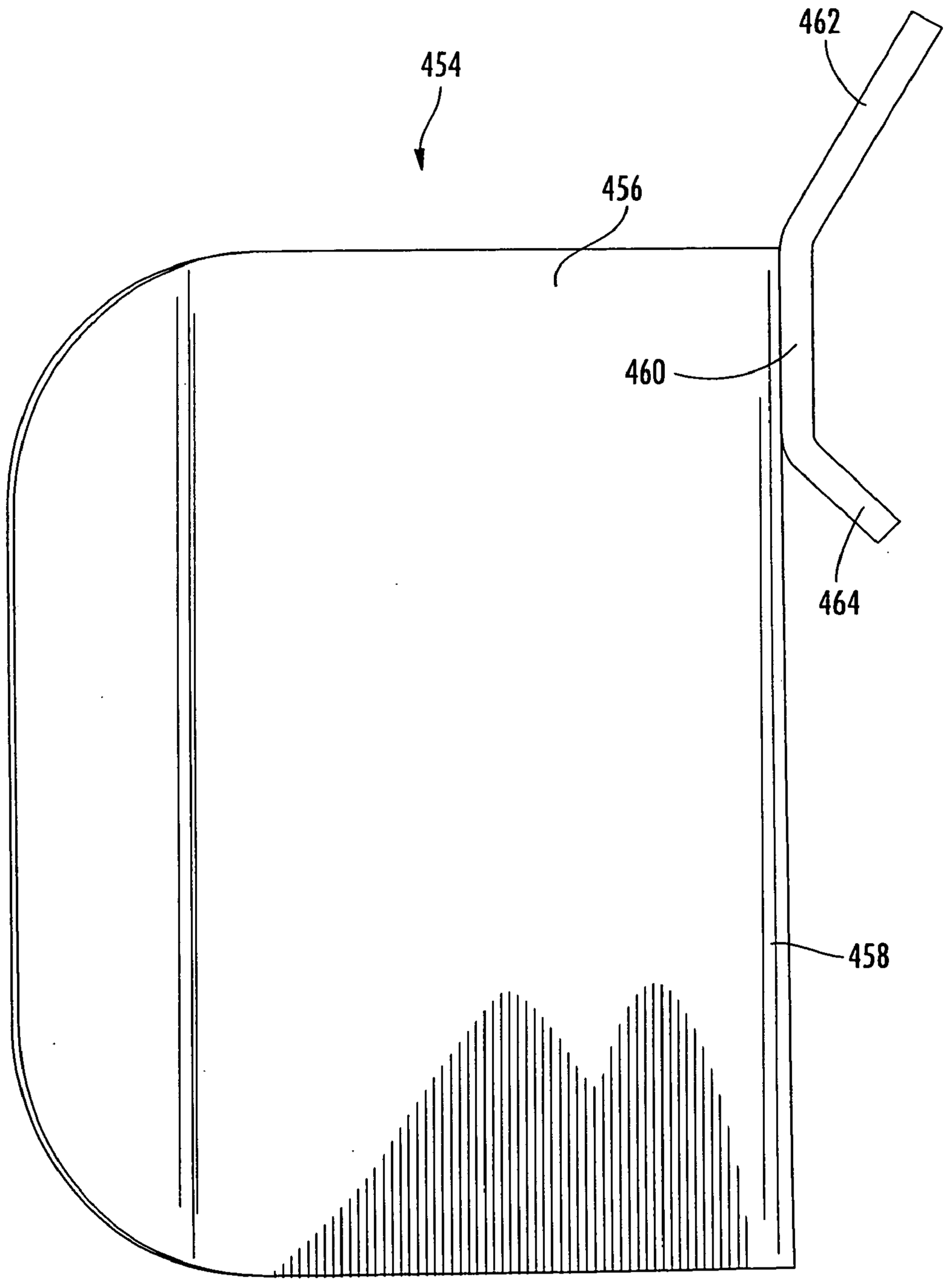

FIG. 60

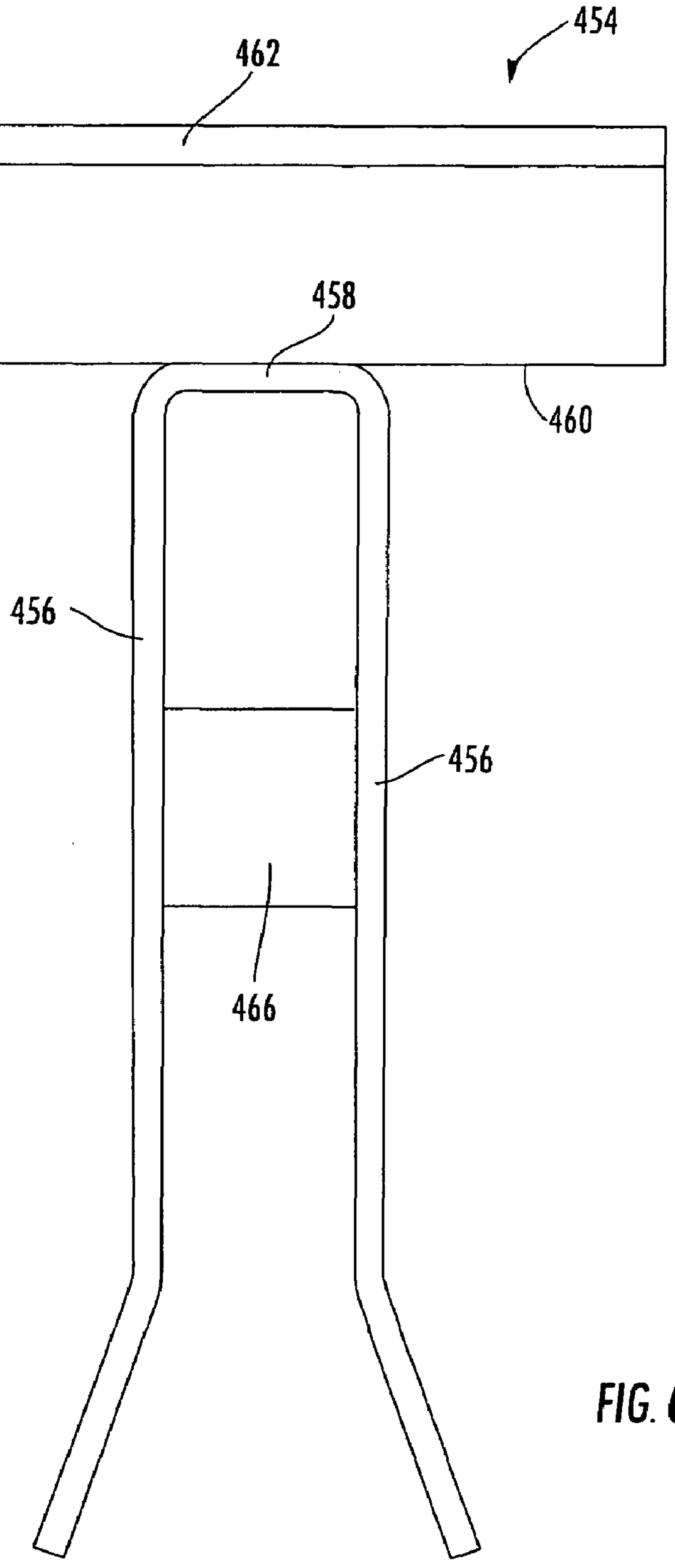

FIG. 61

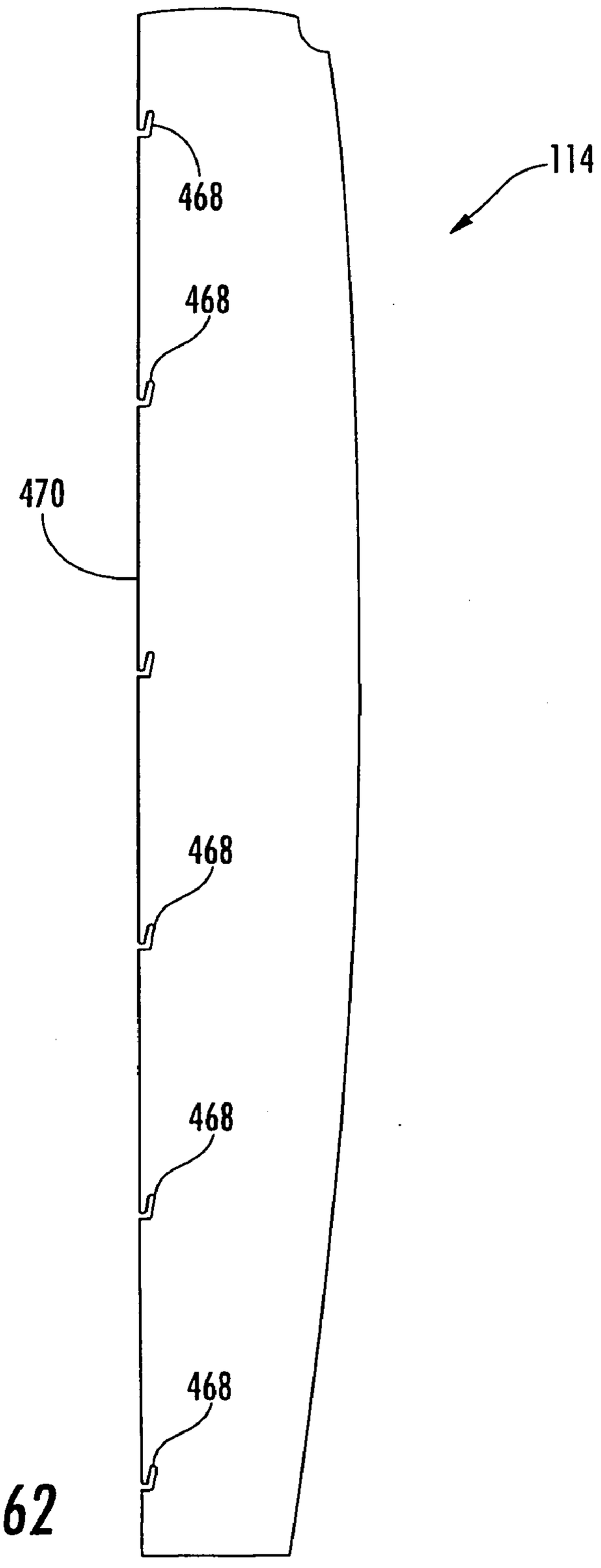

FIG. 62

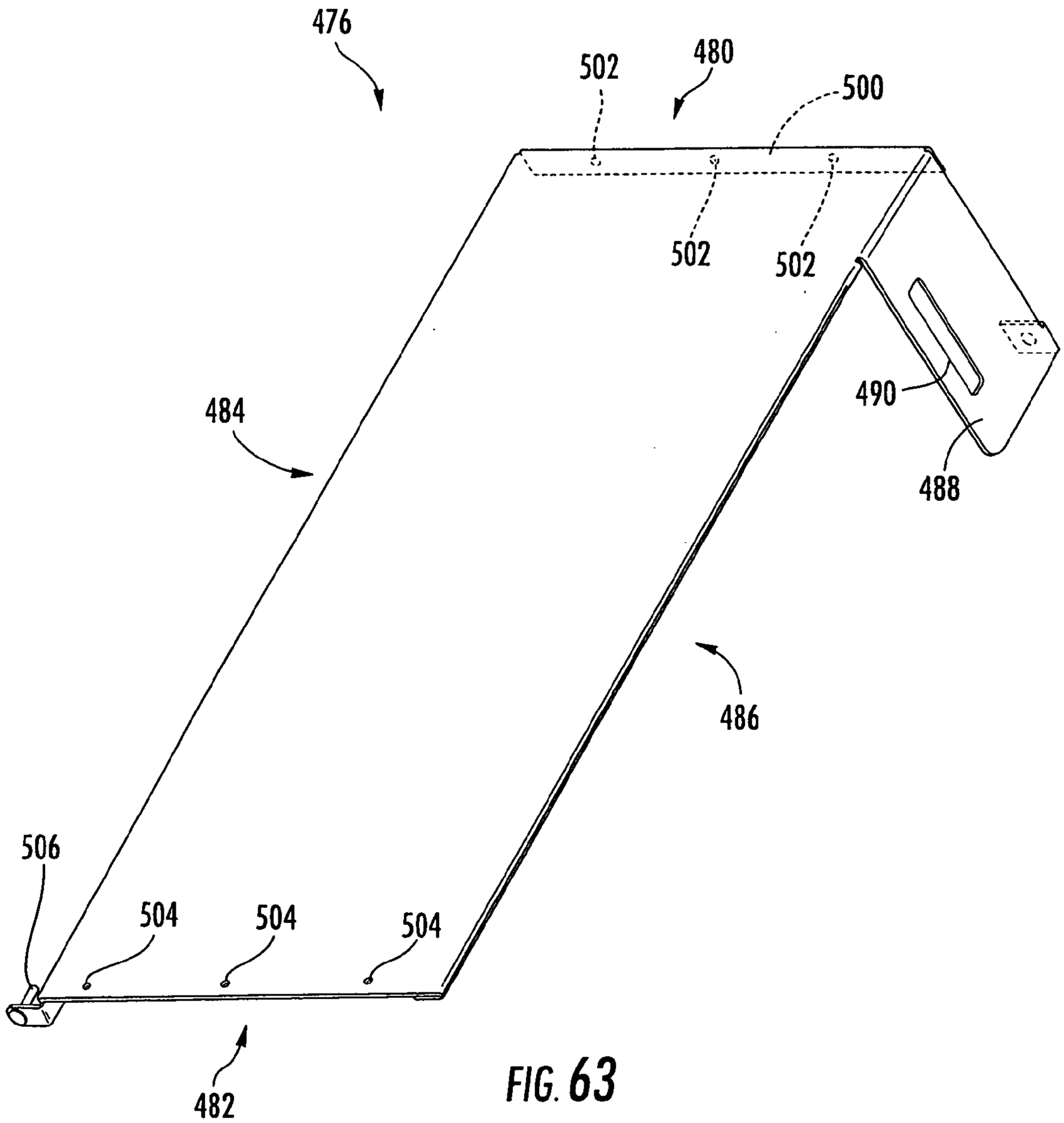

FIG. 63

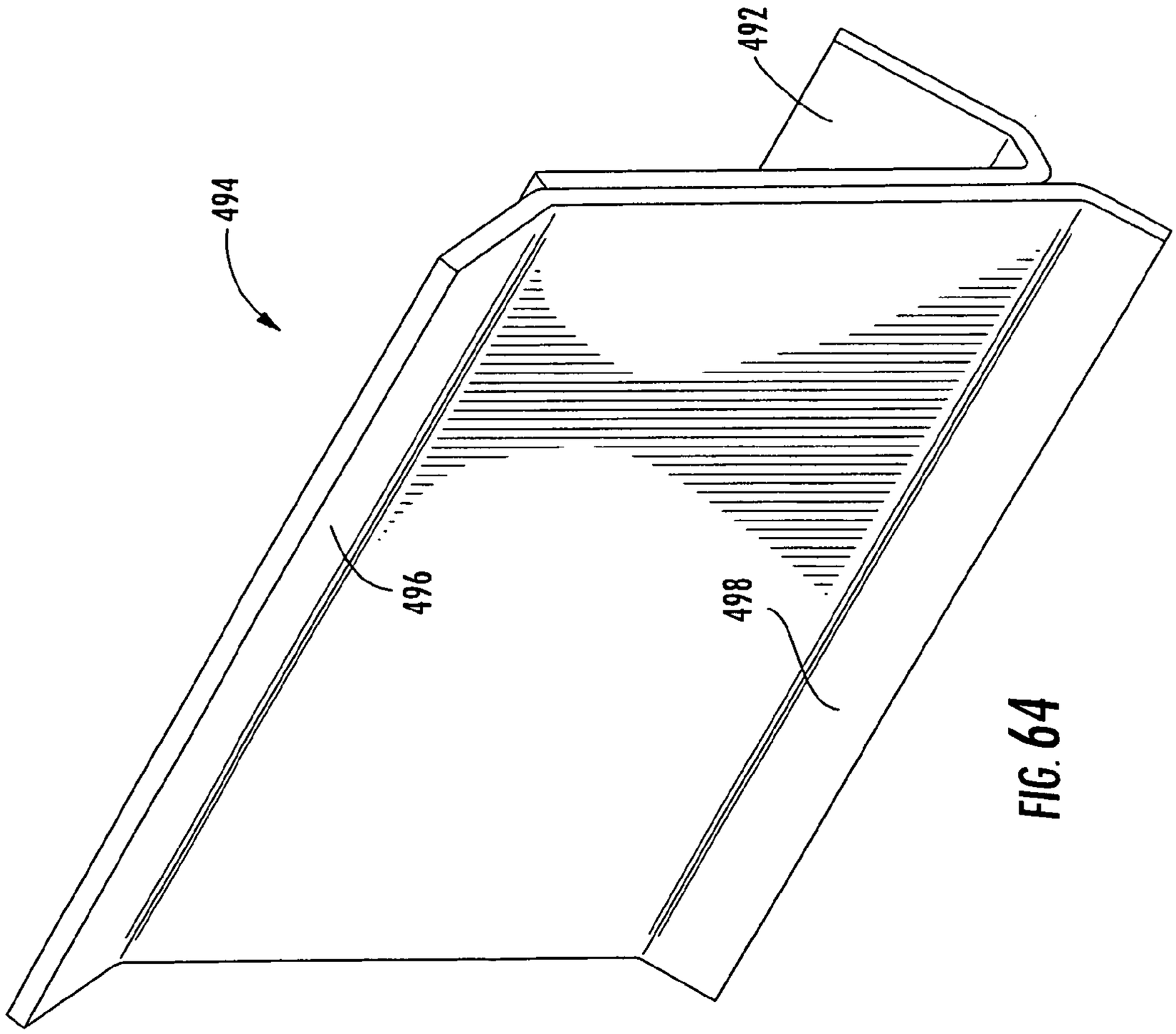

FIG. 64

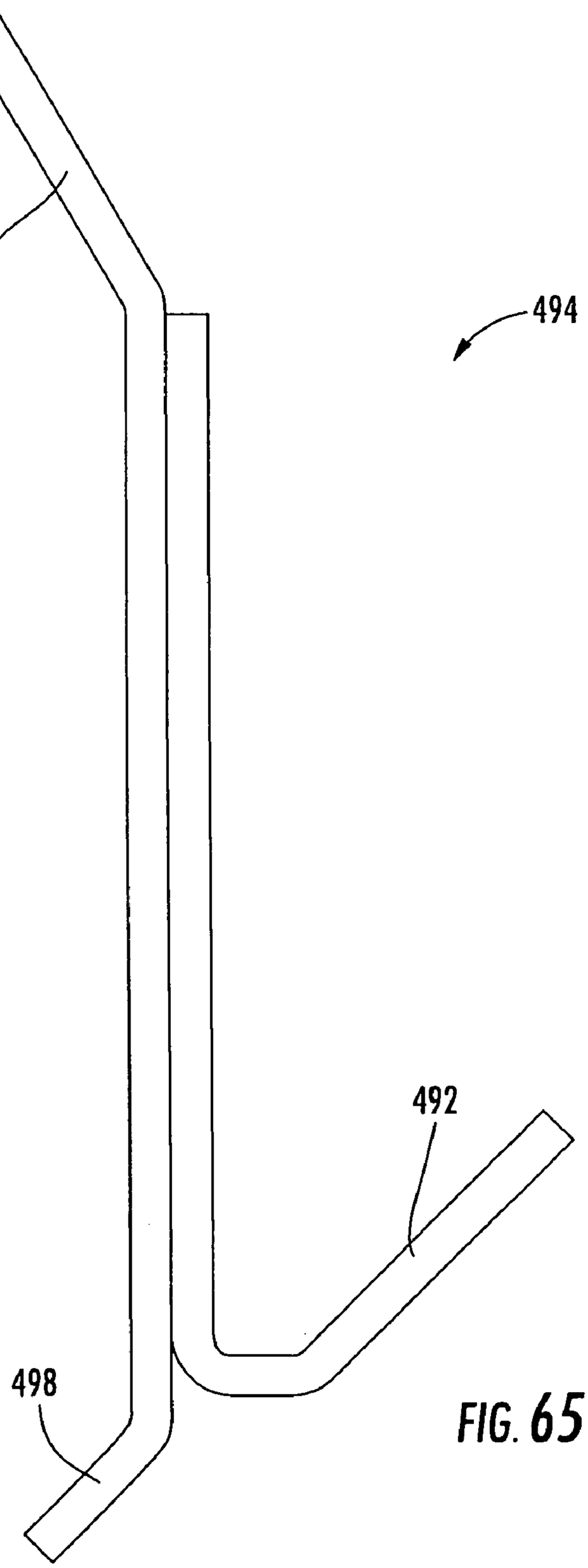

FIG. 65

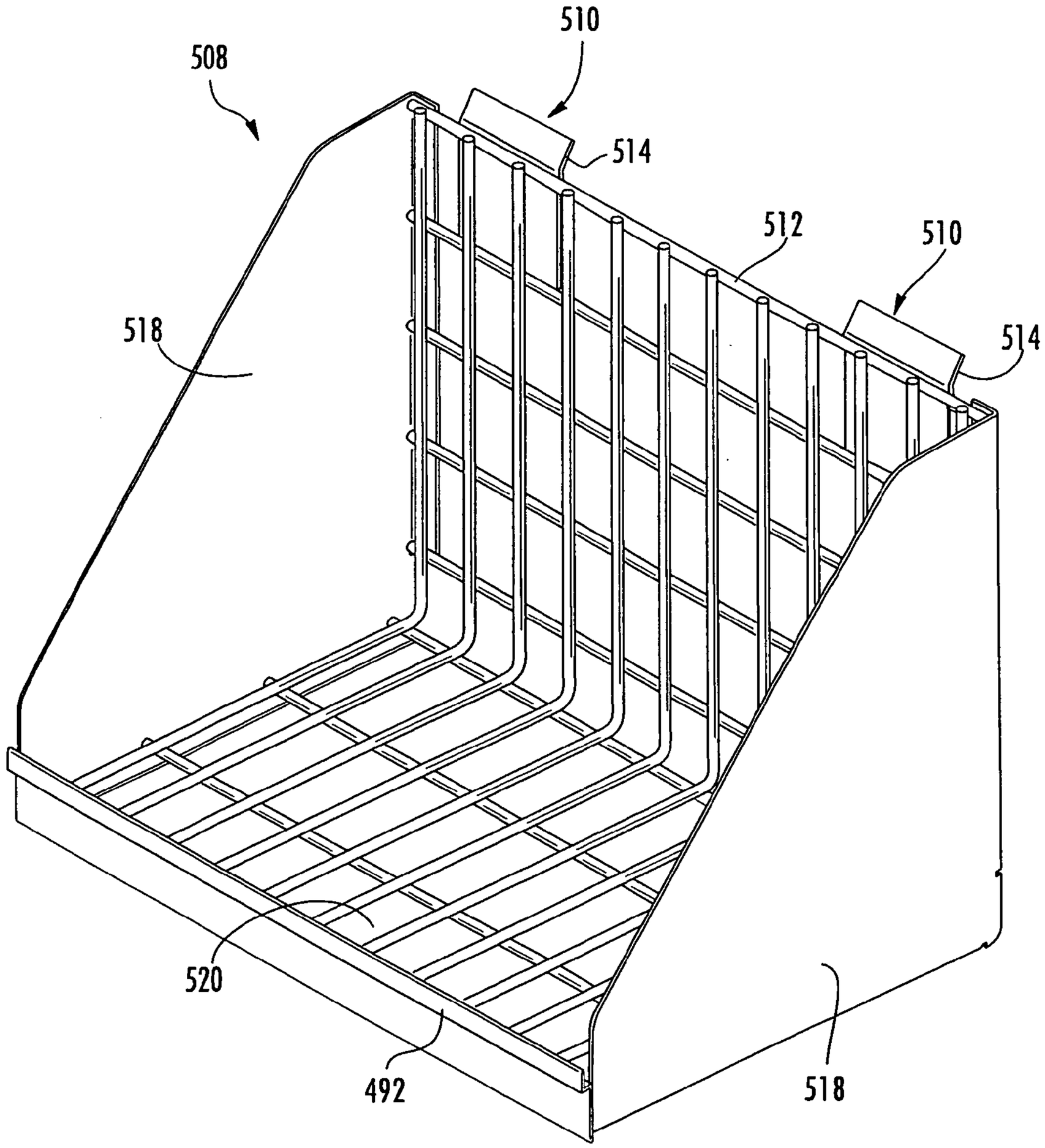

FIG. 66

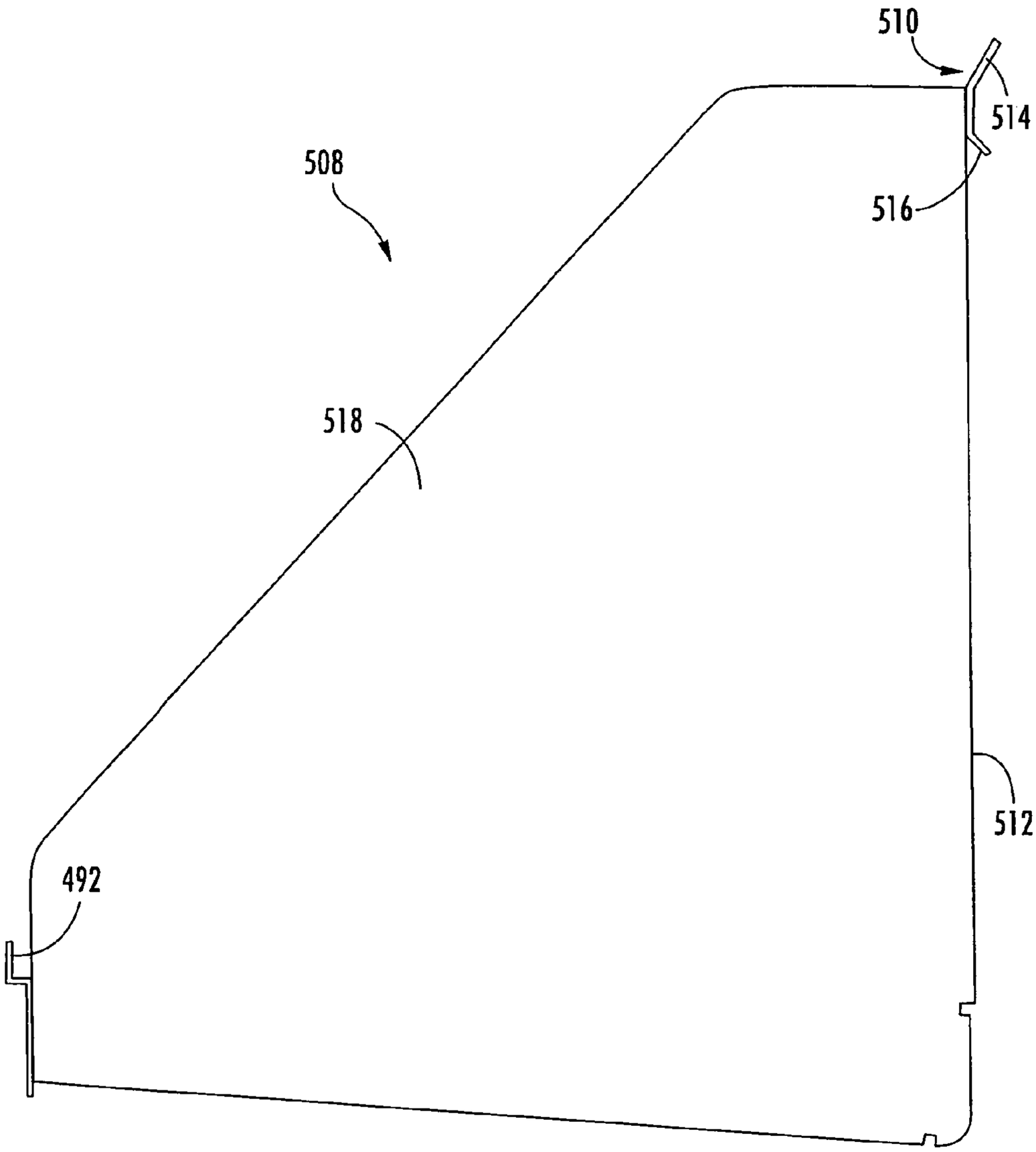

FIG. 67

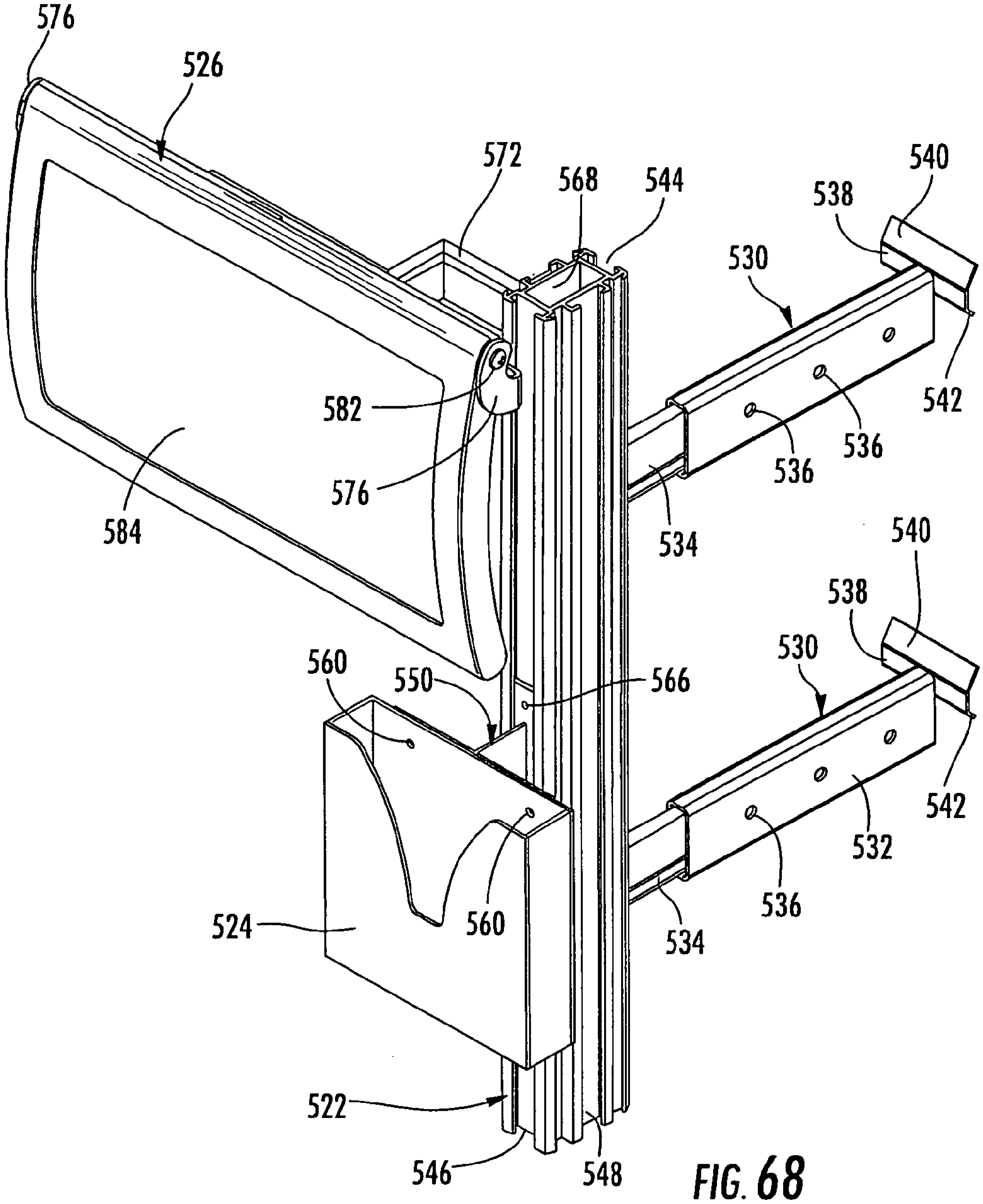
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FIG. 68

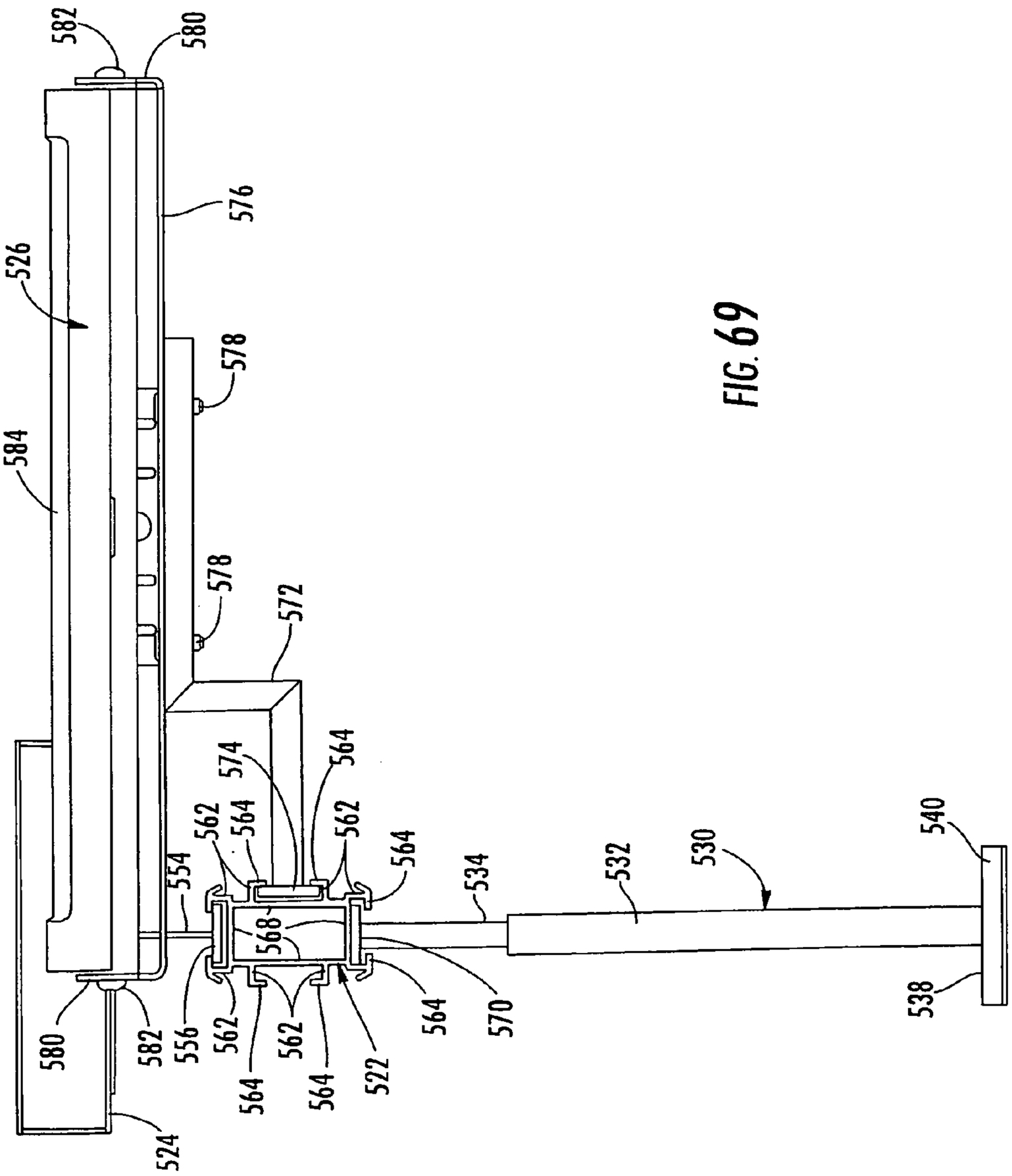
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FIG. 69

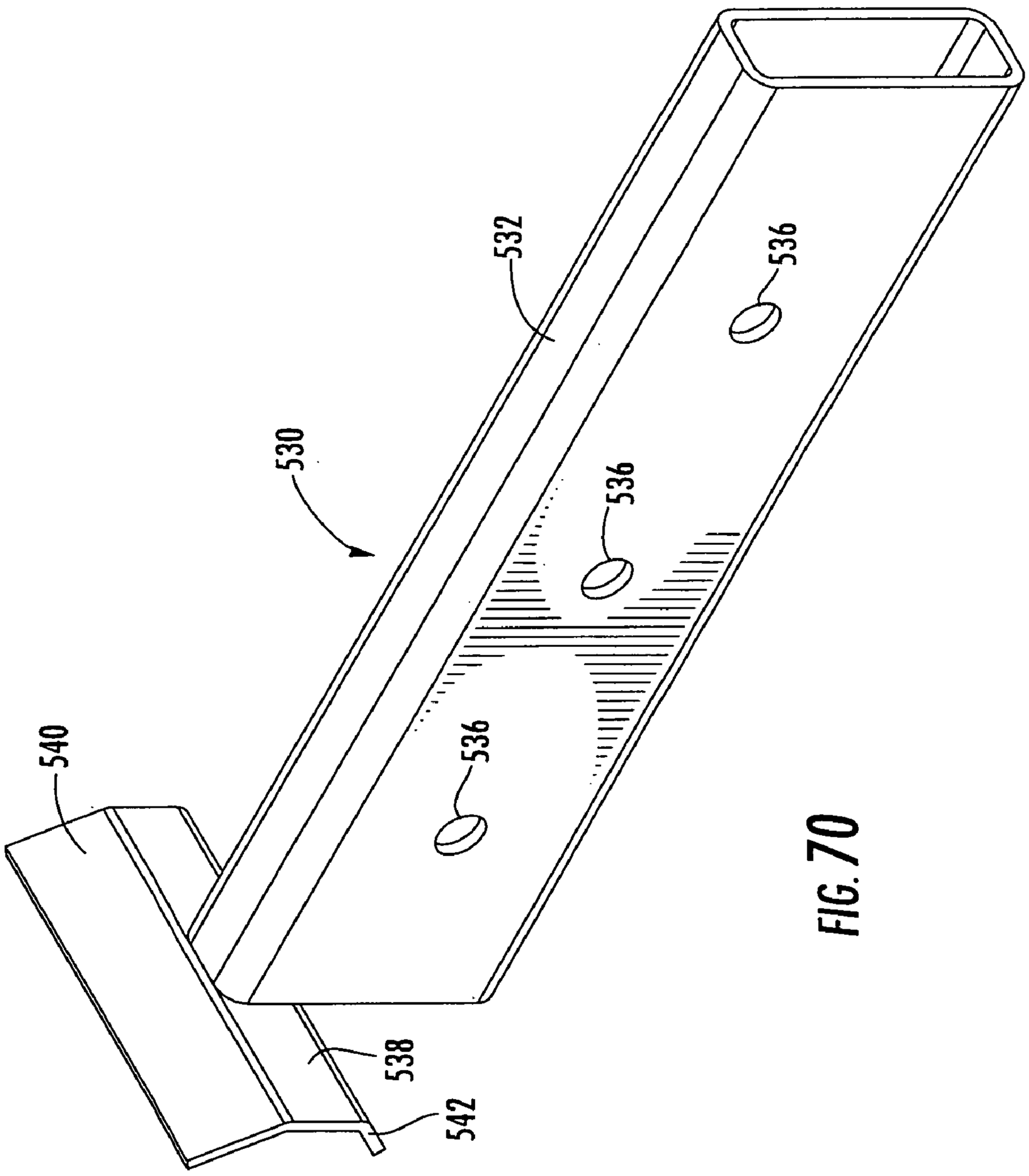

FIG. 70

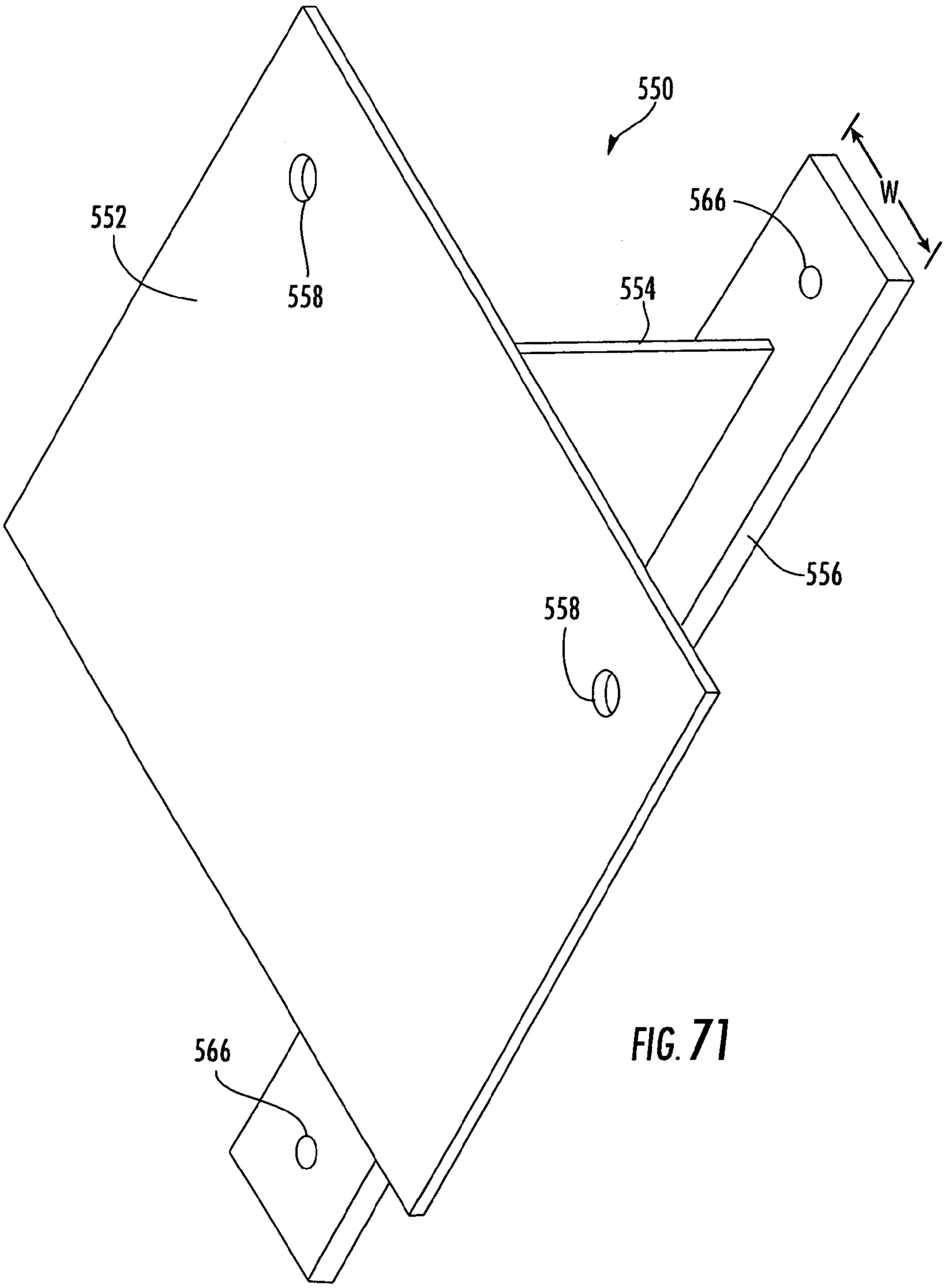

FIG. 71

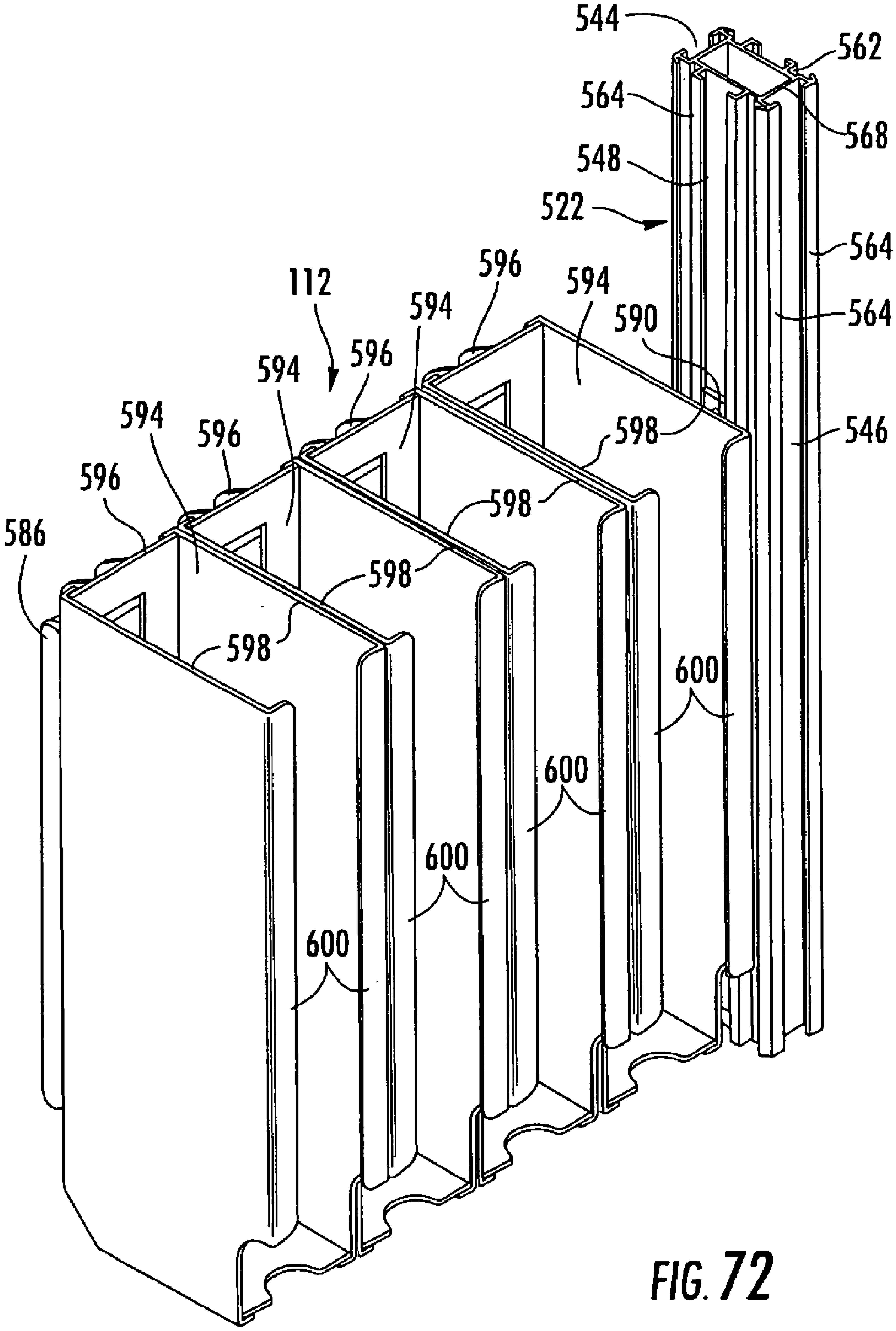
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FIG. 72

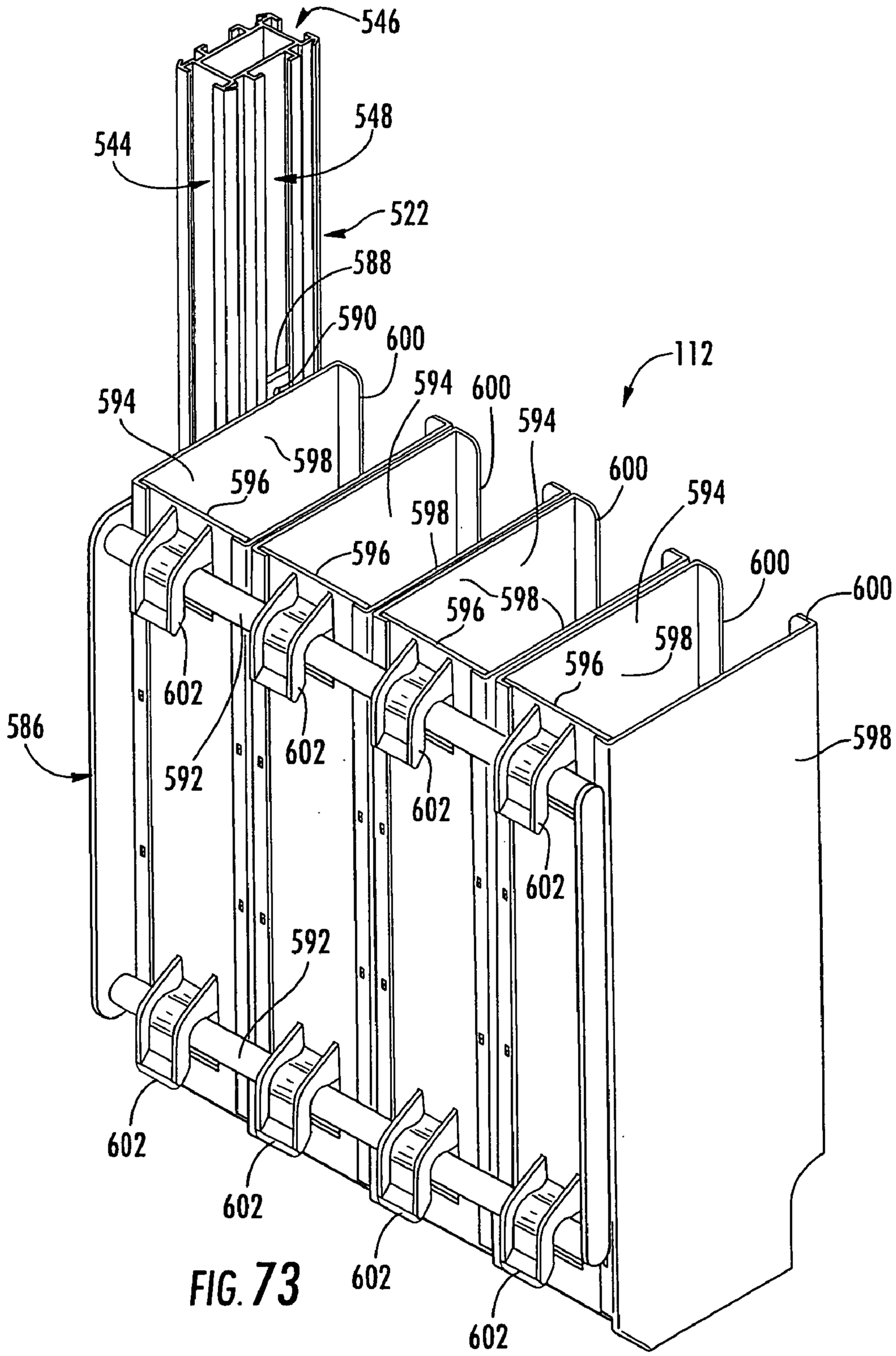

FIG. 73

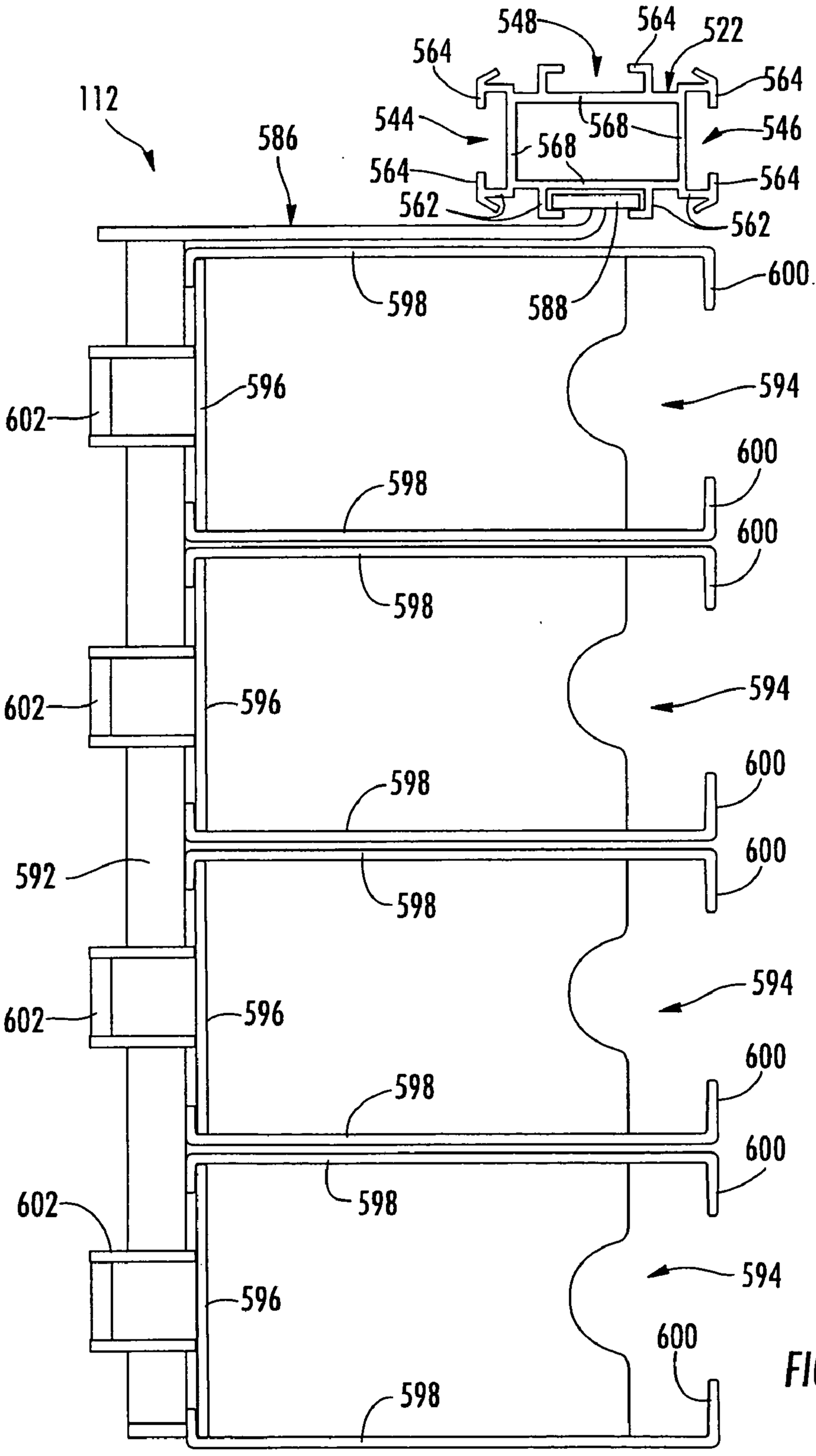
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FIG. 74

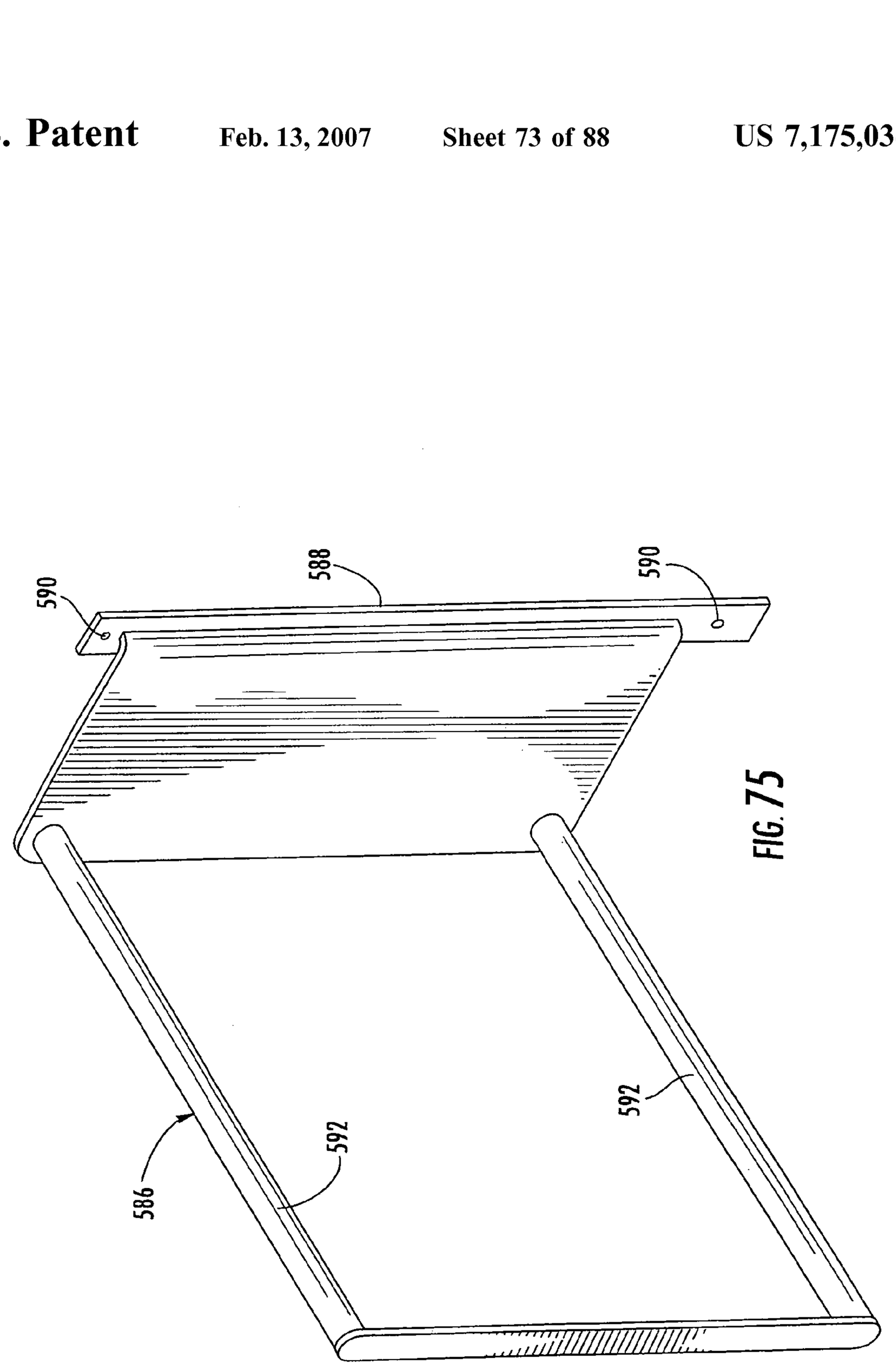

FIG. 75

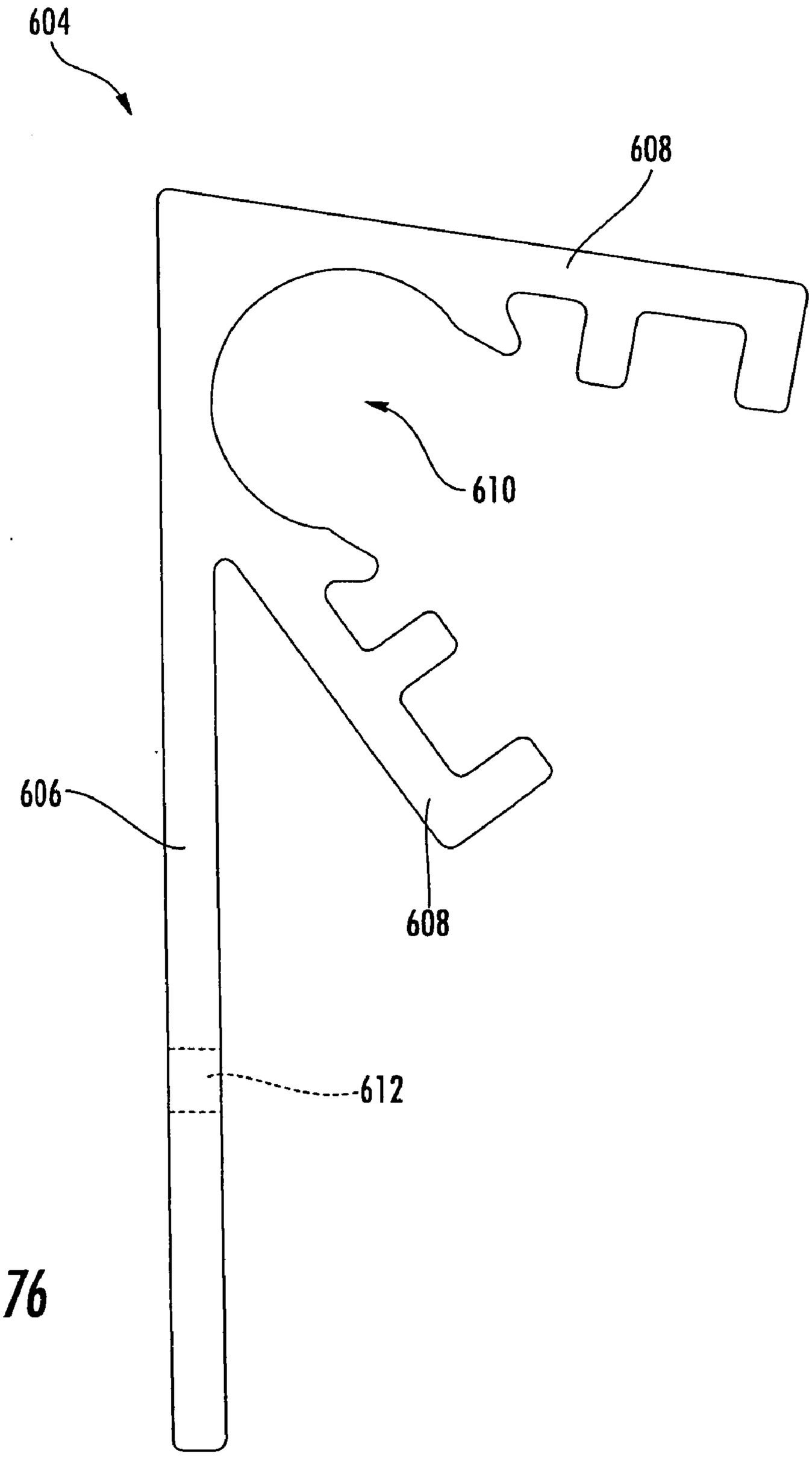

FIG. 76

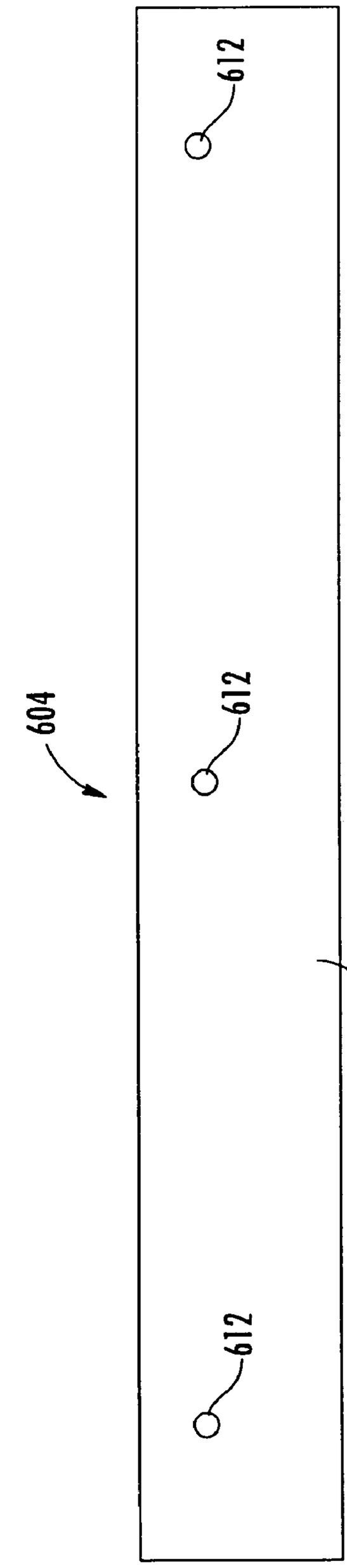

FIG. 77

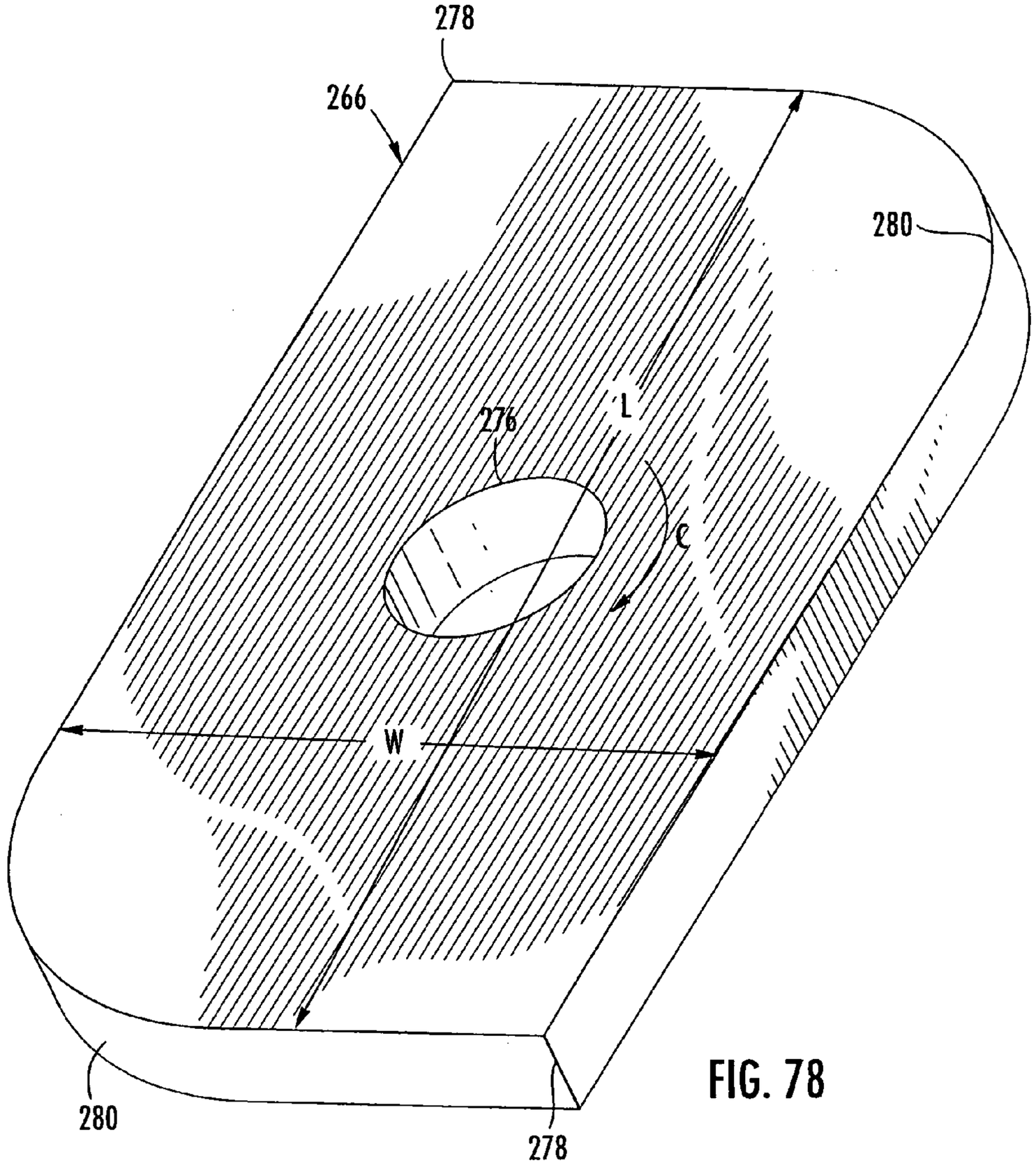

FIG. 78

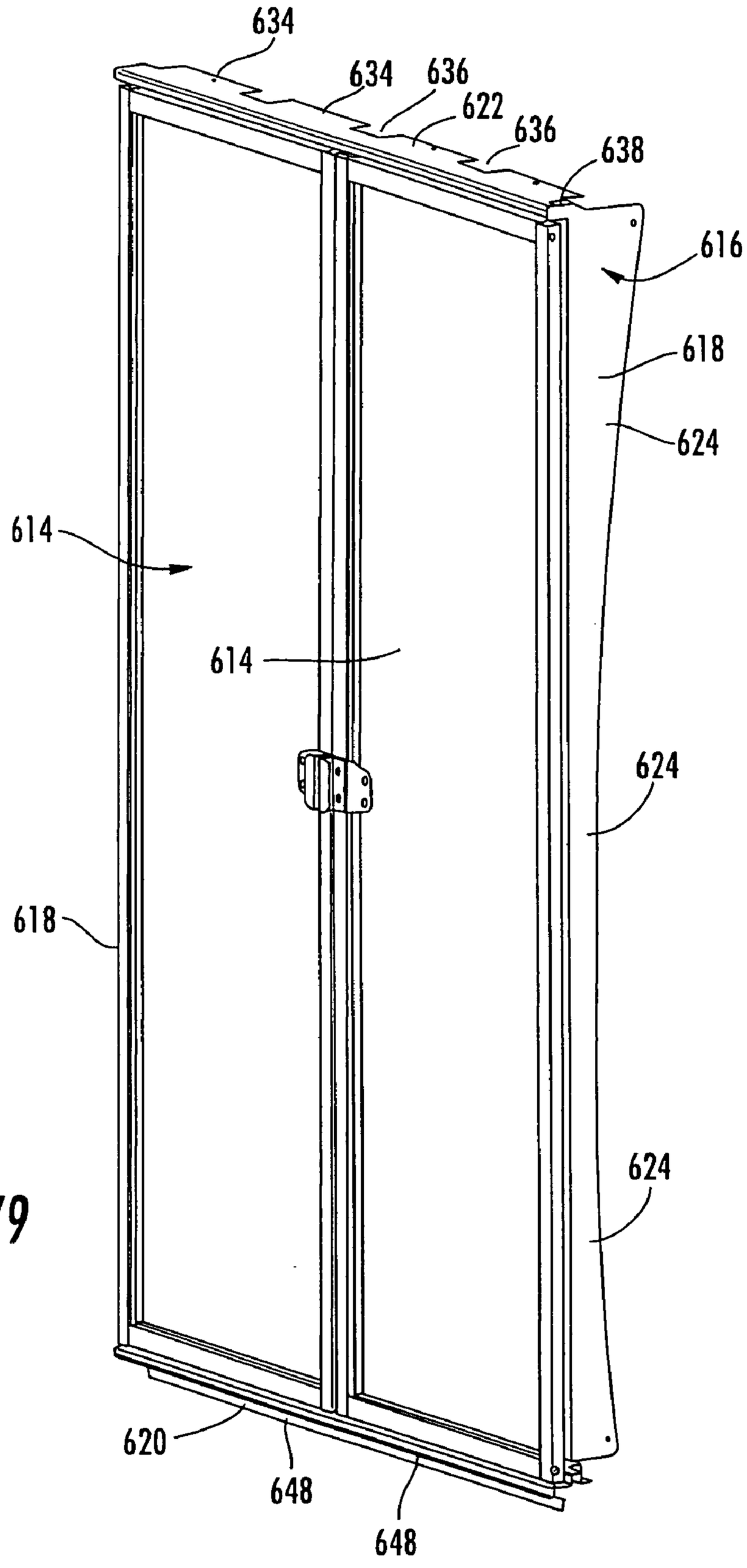
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FIG. 79

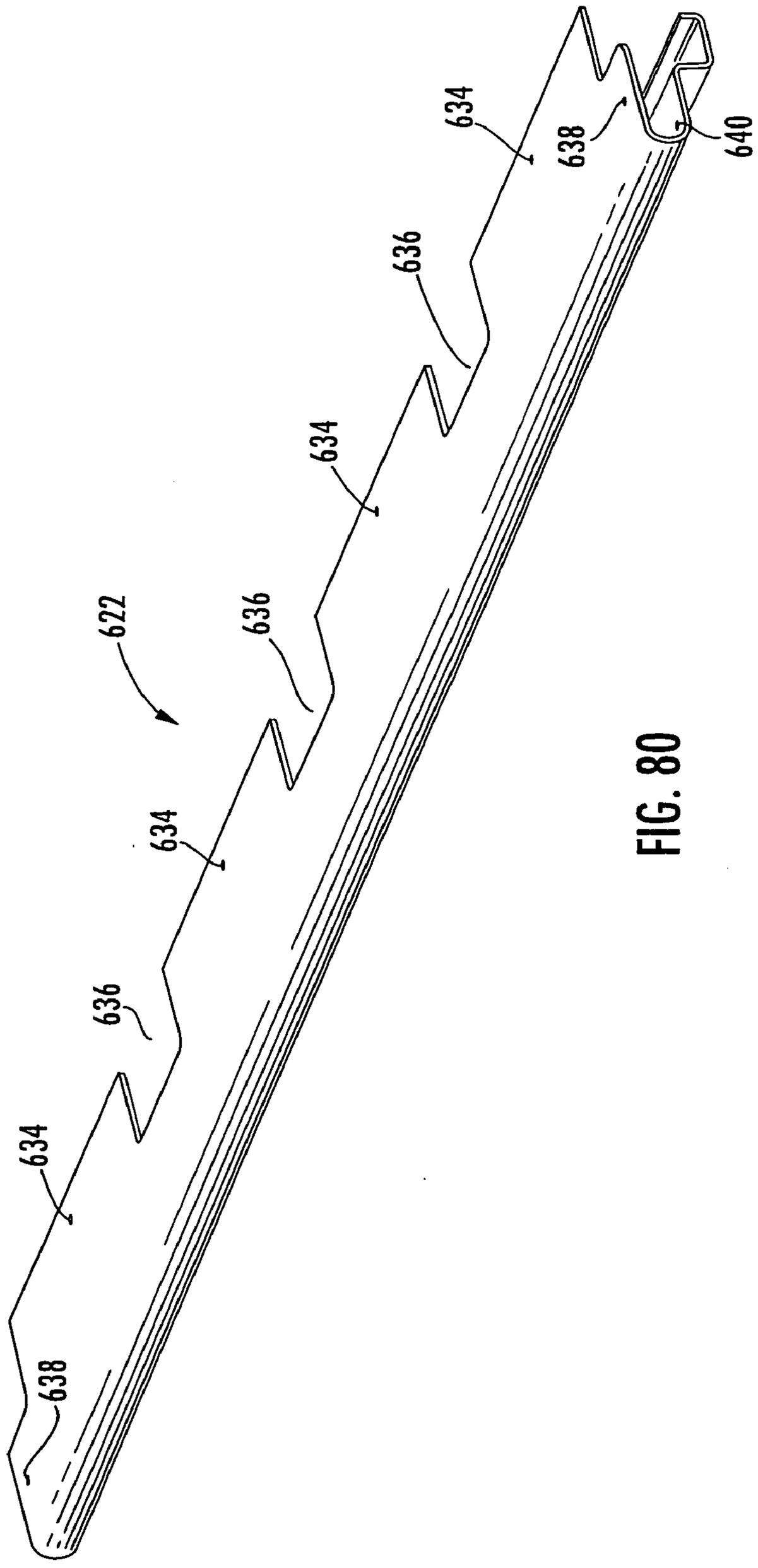

FIG. 80

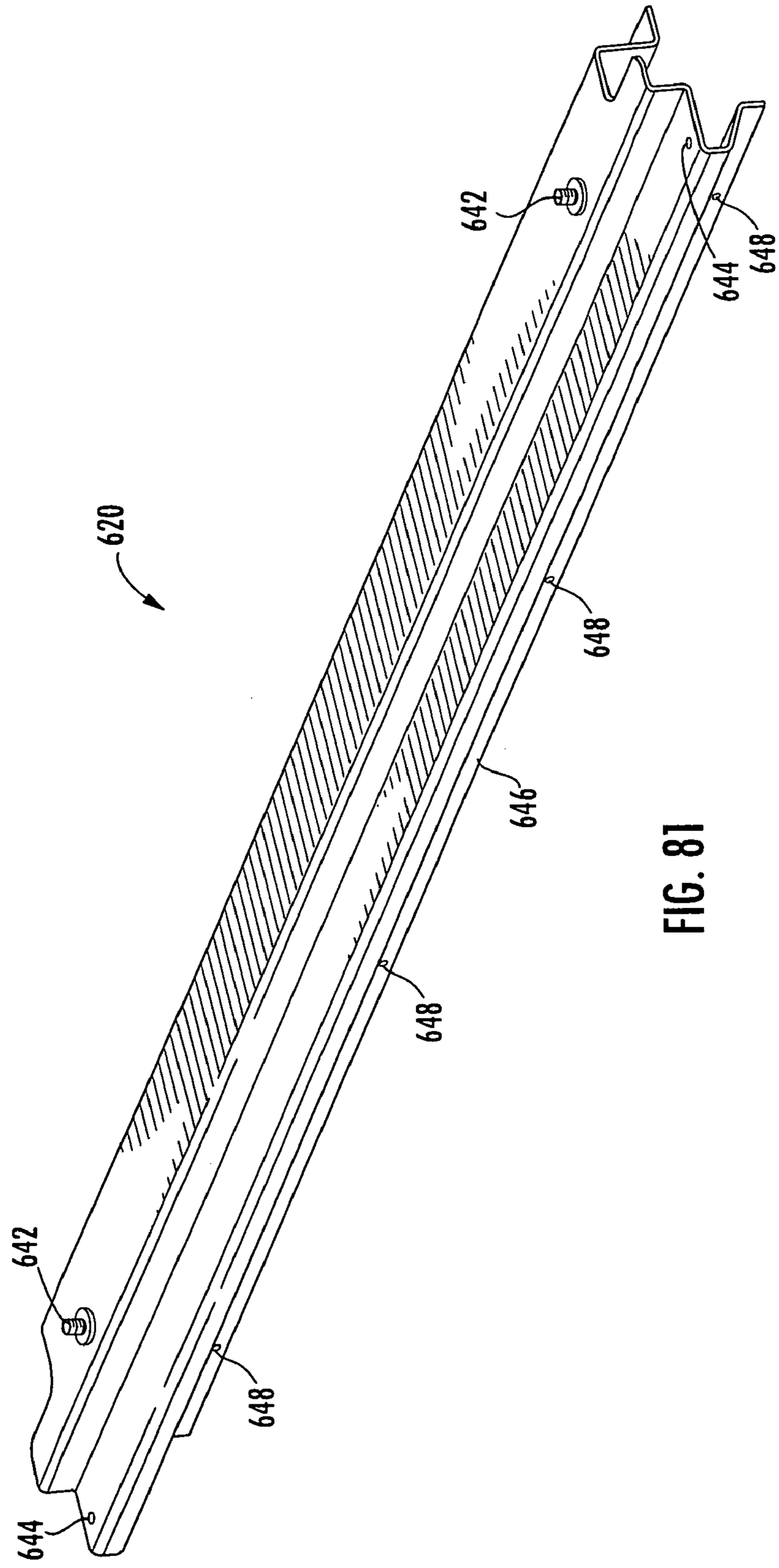

FIG. 81

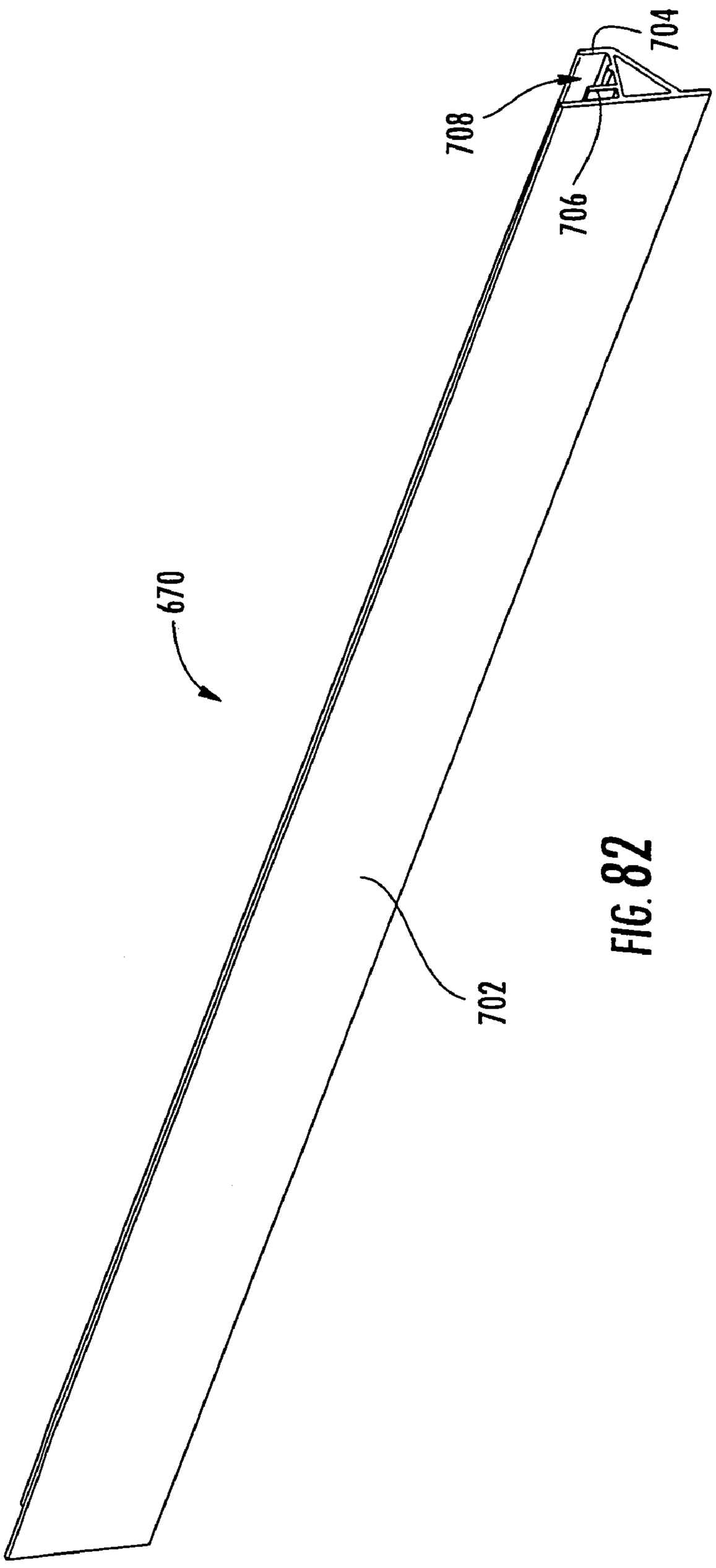

FIG. 82

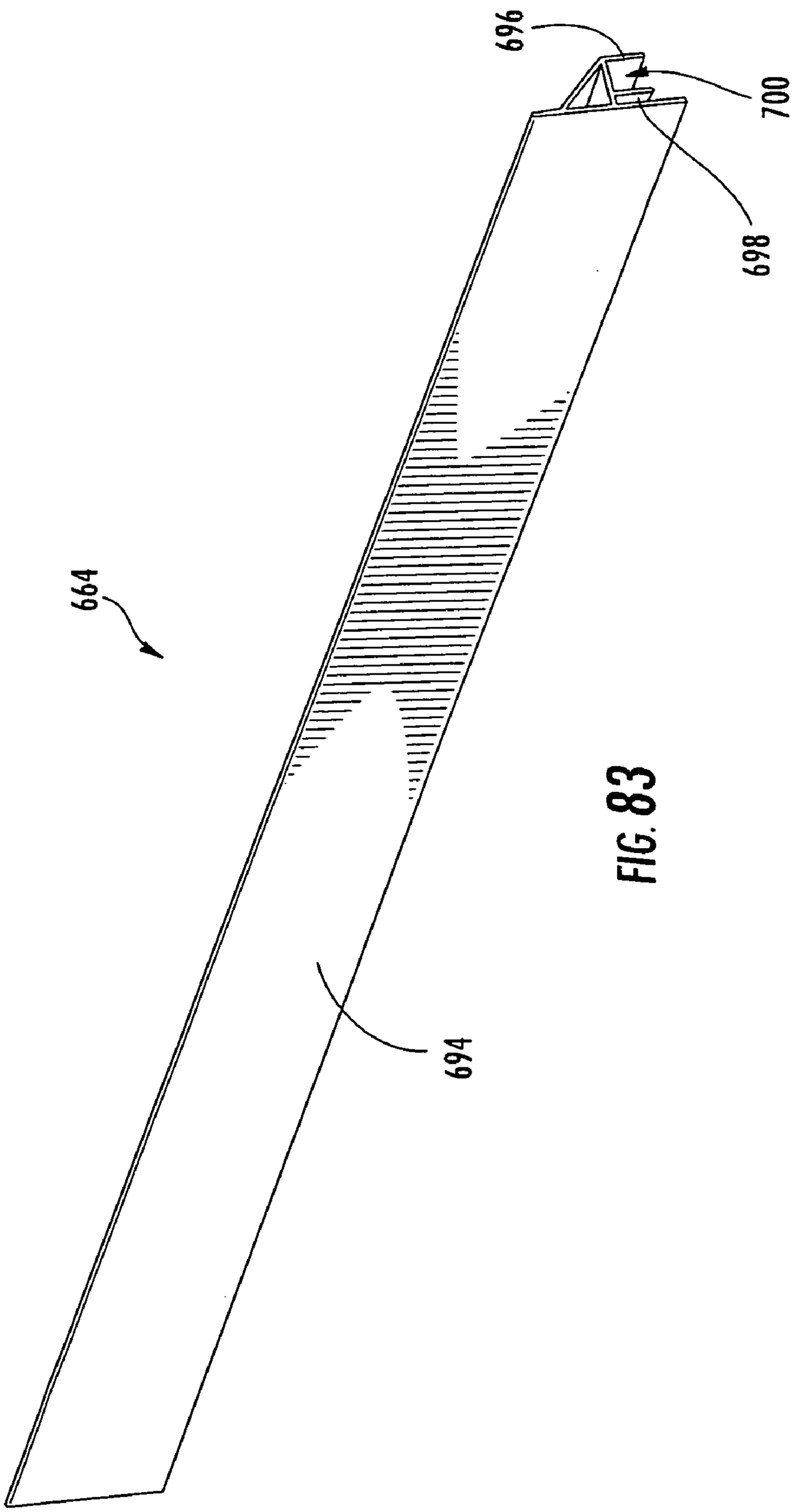

FIG. 83

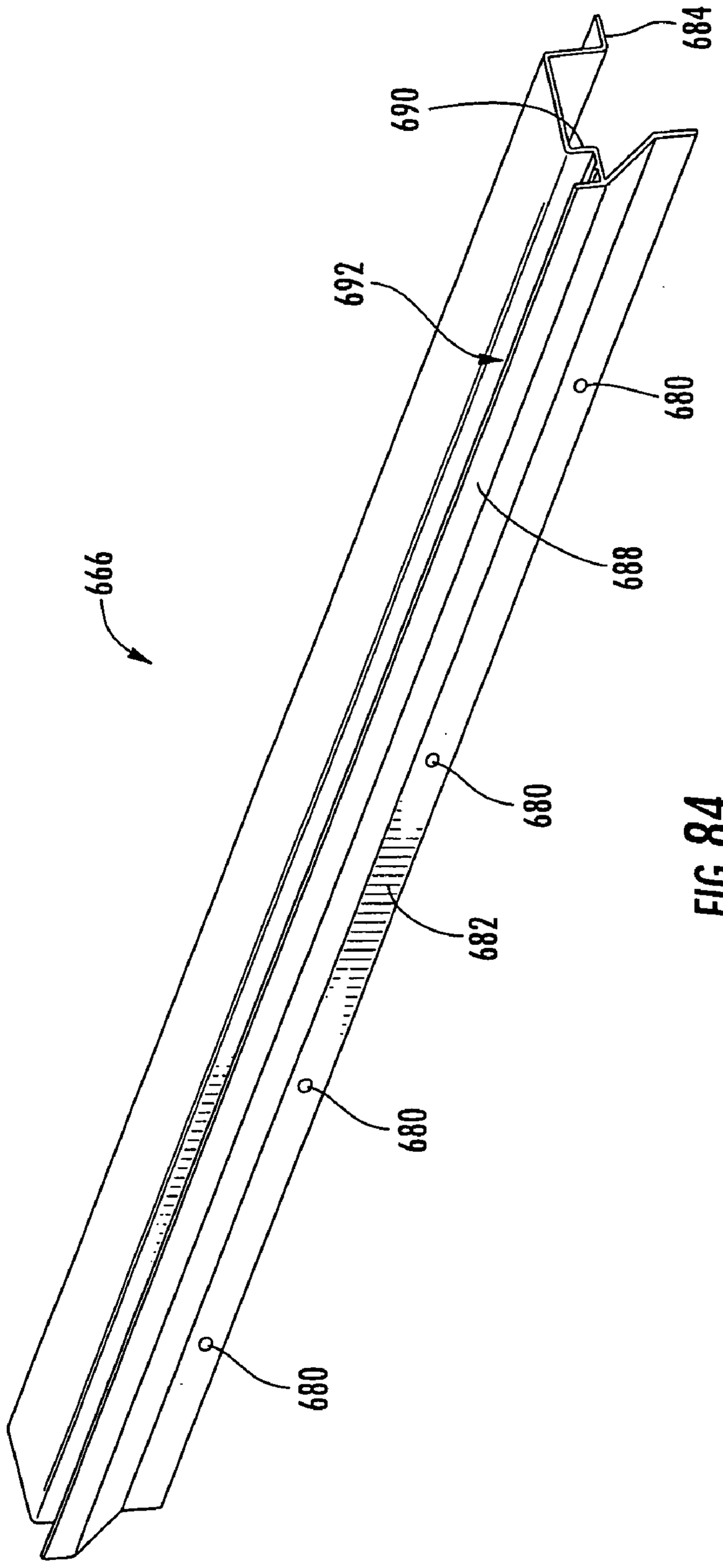

FIG. 84

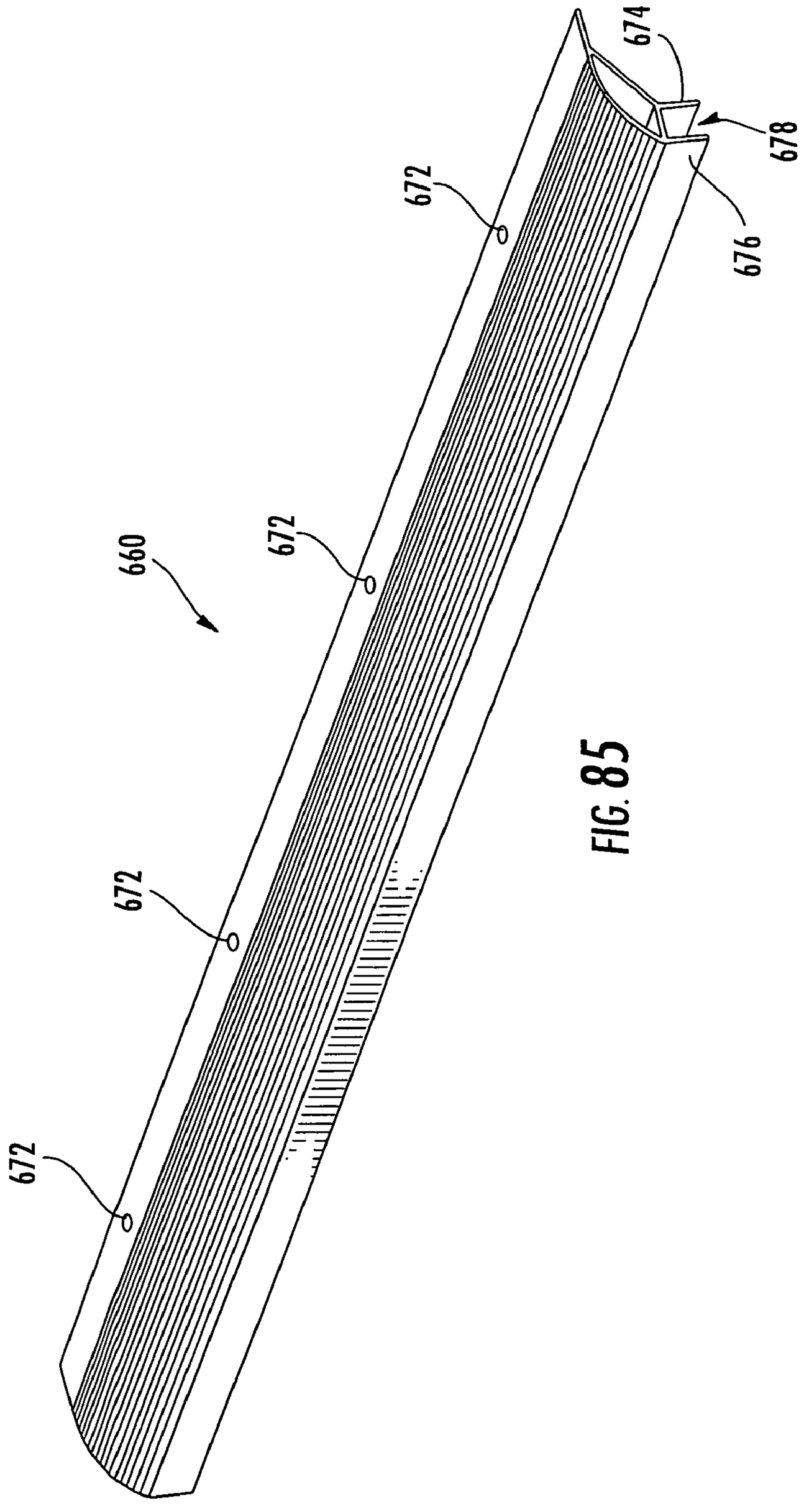

FIG. 85

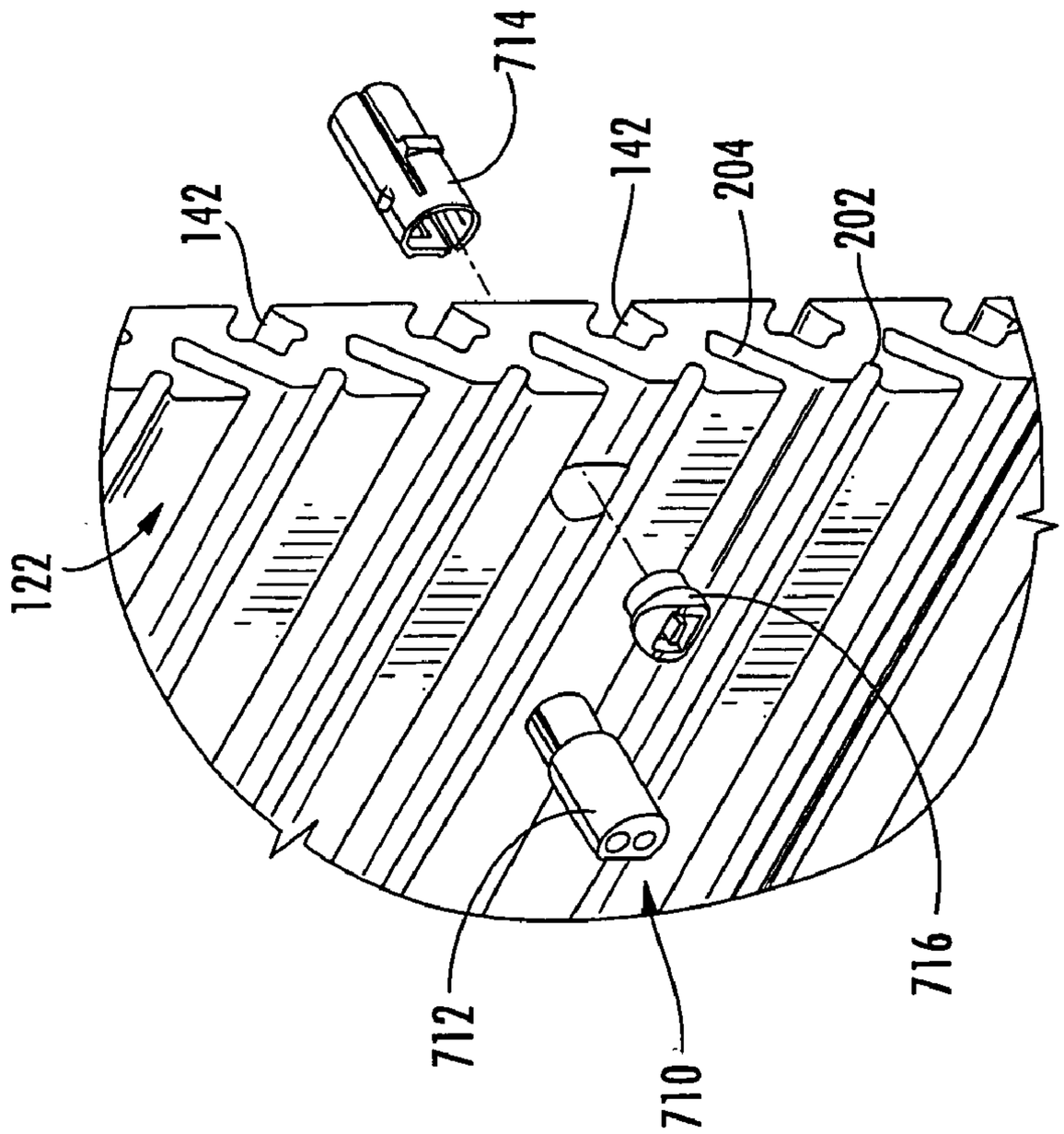

FIG. 87

FIG. 86

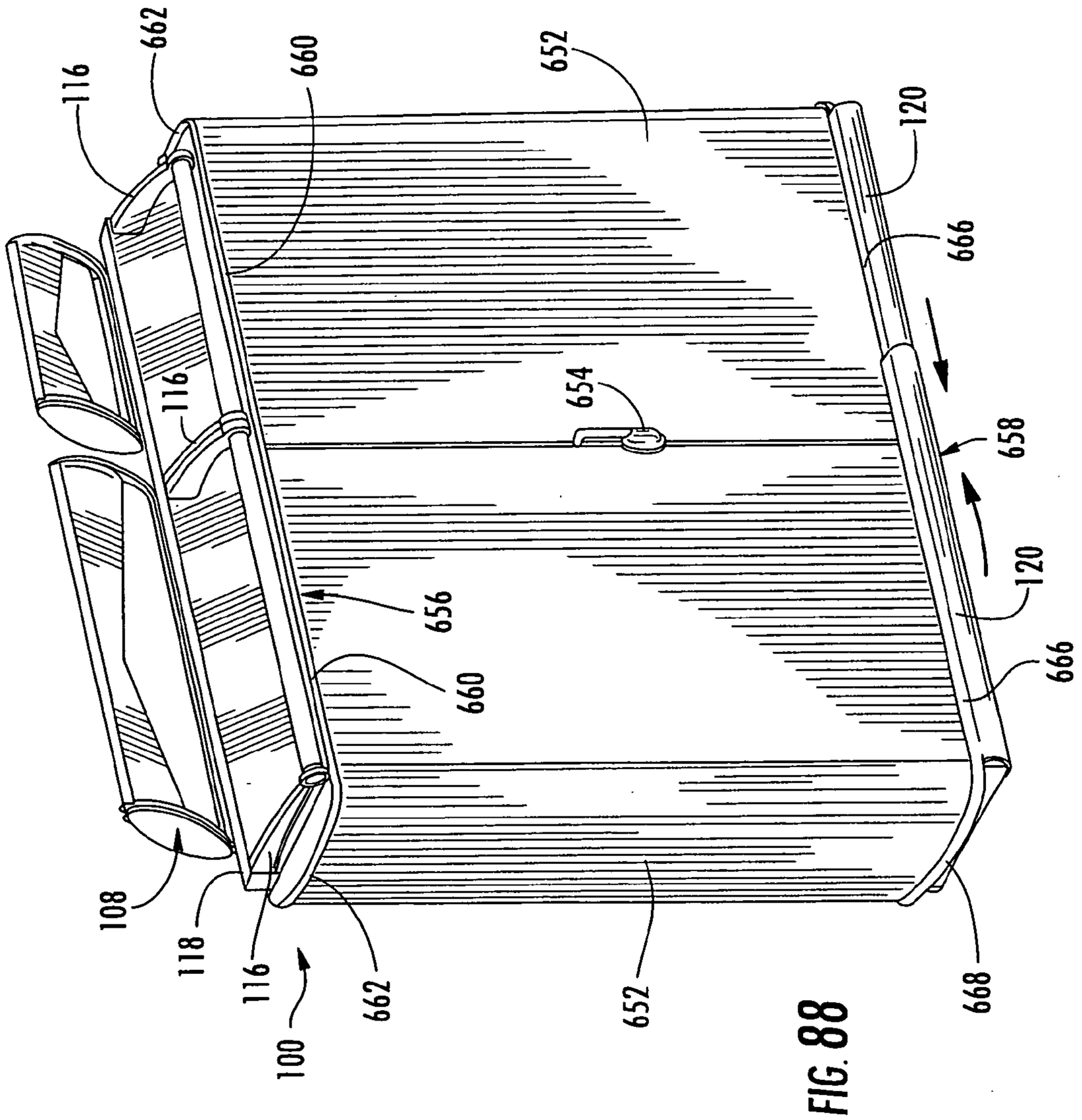
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FIG. 88

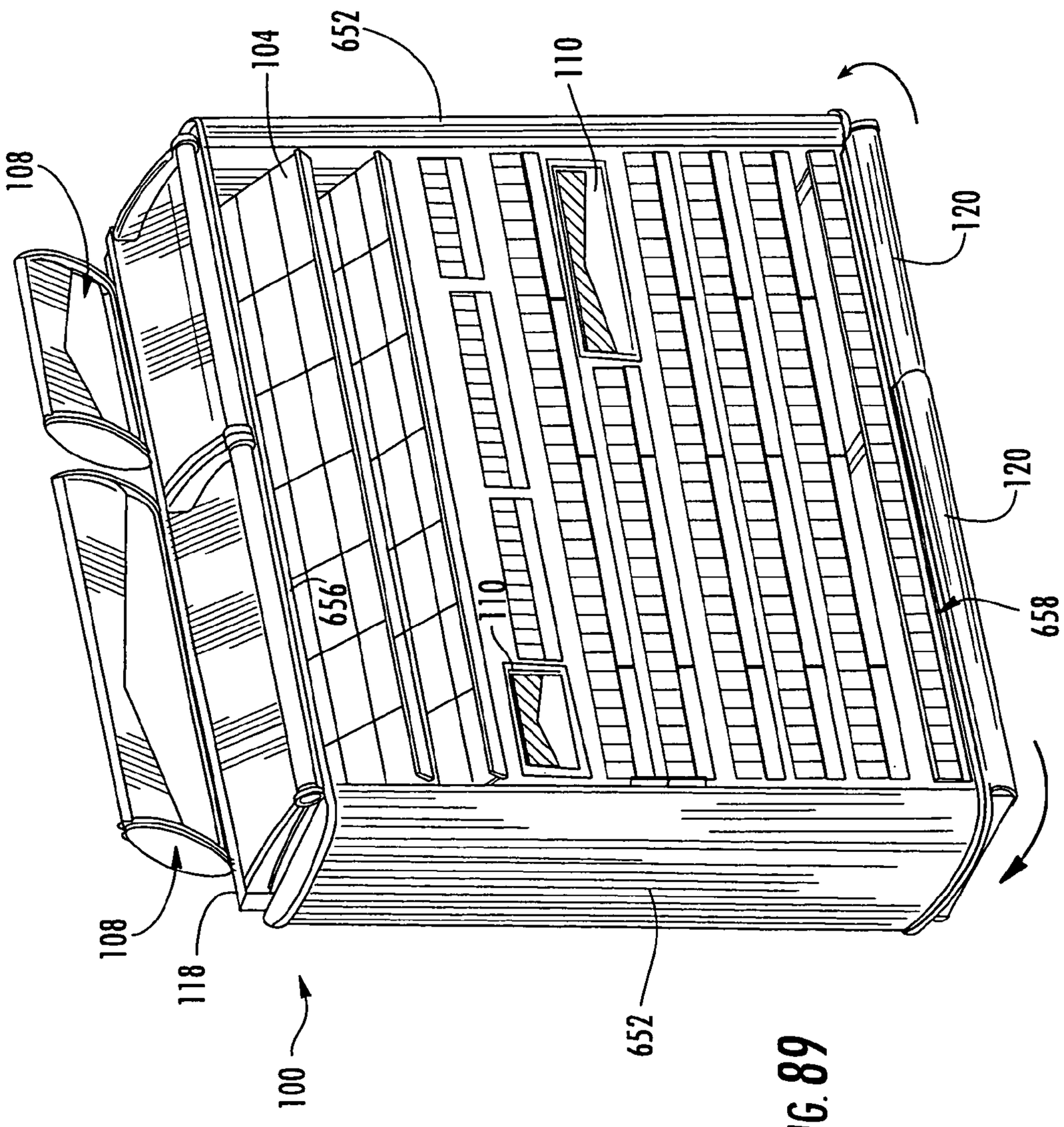

FIG. 89

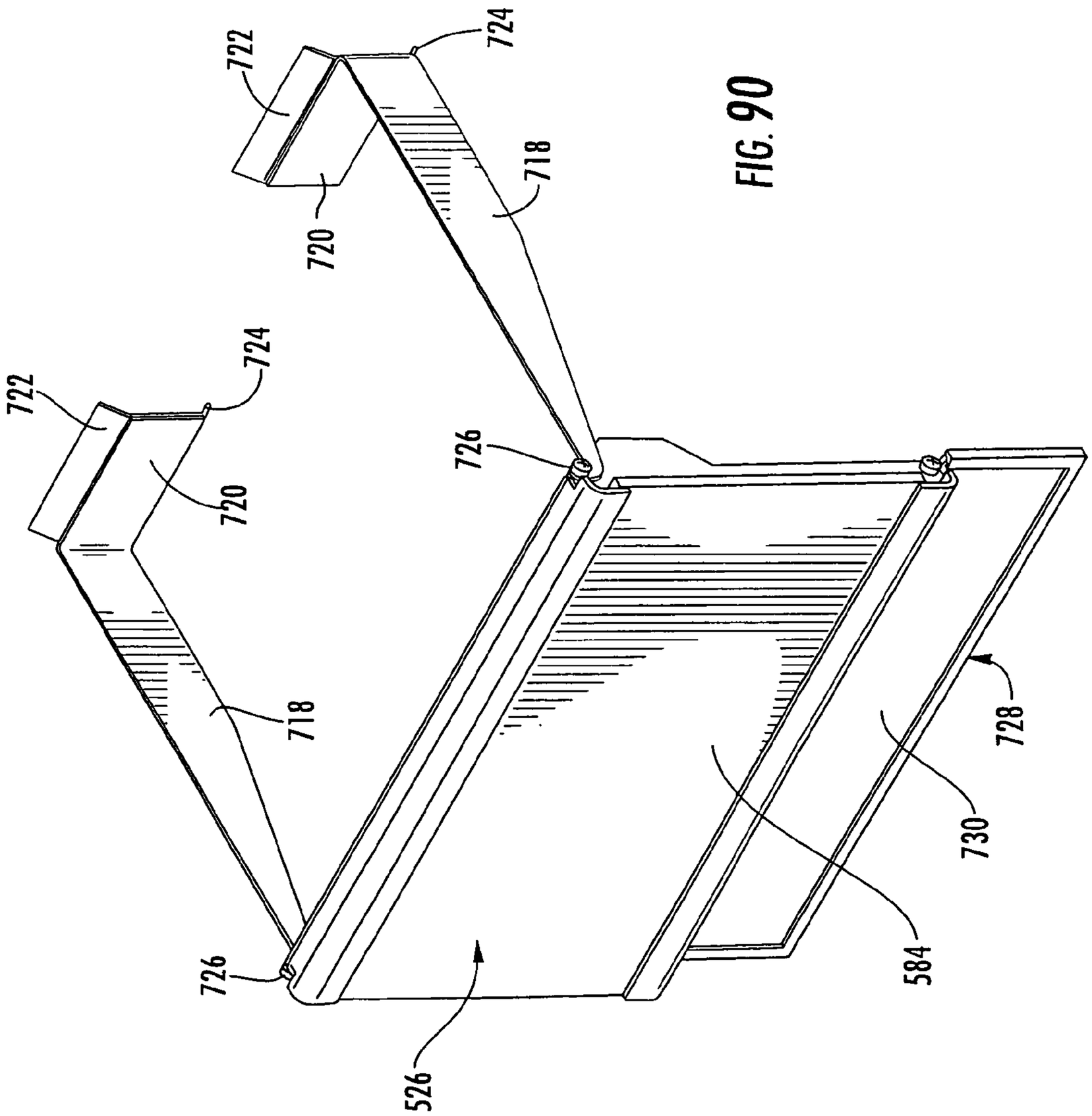

FIG. 90

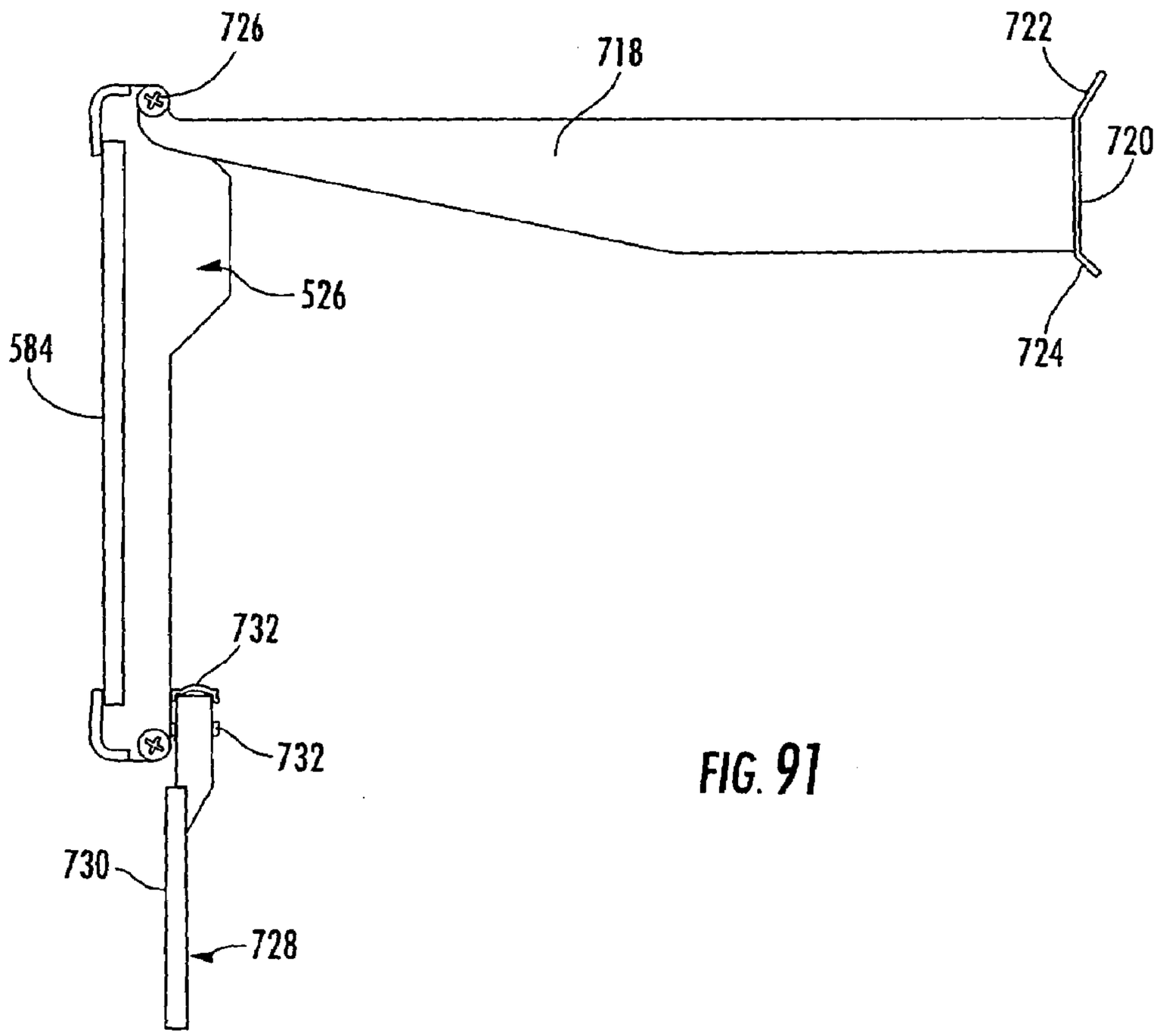

FIG. 91

MODULAR, ADJUSTABLE DISPLAY RACK

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority to U.S. provisional application Ser. No. 60/388,891 filed Jun. 14, 2002 and entitled MODULAR, ADJUSTABLE DISPLAY RACK. This disclosure of this provisional application is incorporated herein in its entirety by reference.

BACKGROUND OF THE INVENTION

This invention relates generally to display racks, and more particularly to adjustable display racks used to display products for sale in retail locations.

Retail display racks are used to display a wide variety of different products that are offered for sale. In the past, these retail display racks have suffered from a number of disadvantages. For example, past retail displays have often been manufactured having a fixed size and fixed arrangement for displaying the products. These past displays have also been limited in the location, arrangement, and ease of re-arrangement of the advertising and signs that accompany the display and which help to sell the products stored thereon. The individual shelves on past display racks have also often been difficult to adjust without removing the surrounding shelves. This is due to the fact that prior shelves must have their front ends lifted vertically a certain distance before they can be removed and secured at a different height. This certain distance is often more than the vertical distance that separates the shelves. The person attempting to adjust the shelf therefore must remove all of the shelves above the shelf that is to be adjusted before the adjustment can be made.

Furthermore, some display racks are also sold or provided to retailers by the manufacturer of the product that is to be placed on the display. When this is done, the manufacturer of the product has an interest in ensuring that the display is used to display their product, and not the products of another manufacturer. Past displays have offered no assistance in ensuring that retailers did not use the displays to promote other manufacturer's products. As a result, manufacturers of products who provide displays for their products to retailers often find that their displays are altered and used to sell other products. The need can therefore be seen for a display rack that helps alleviate these and other disadvantages of past display racks.

SUMMARY OF THE INVENTION

Accordingly, the present invention provides a display rack that overcomes these and other disadvantages. The display rack is constructed of a multitude of modular components that can be easily assembled without the use of special tools or separate fasteners. Moreover, once assembled, the components can easily be re-arranged into a variety of different display configurations. The display offers a great degree of flexibility in being constructed in different sizes and configurations. Numerous other advantages are also provided, as will be discussed in more detail below.

According to one aspect of the invention, a display stand is provided that includes a back wall and at least one shelf. The back wall includes a front face, a back face, a first side, and a second side. The front face includes a plurality of parallel, generally horizontal slots that continuously extend for a majority of the distance from the first side to the second side. The shelf is releasably attachable to the front face of the back wall and is adapted to fit into at least one of the slots to thereby support the shelf on the back wall. The shelf is attachable to the back wall at a plurality of different heights and at a plurality of different side-to-side positions.

According to another aspect of the invention, a display stand is provided that includes a generally vertical back wall, a plurality of shelves, and a connector. The back wall has a front face, a back face, a first side, and a second side. The front face of the back wall includes a plurality of slots. The shelves each have first and second sides and the shelves are releasably attachable to the front face of the back wall. The shelves also each include at least one insert that fits into at least one of the slots to thereby support the shelves on the back wall. The shelves are attachable to the back wall at a plurality of different heights and at a plurality of different side-to-side positions between the sides of the back wall. The connector is attached to each of the shelves and adapted to couple a first one of the shelves with a second one of the shelves when the first and second shelves are positioned adjacent to each other in a side-by-side arrangement. The connector maintains the first and second shelves in horizontal alignment with each other when the shelves are coupled together by the connector.

According to another aspect of the present invention, a display stand is provided that includes a generally vertical back wall and a plurality of shelves that are releasably attachable to the back wall. The back wall includes a plurality of slots. The shelves each include an upper insert and a lower insert. The upper and lower inserts are adapted to fit into separate ones of the slots defined on the back wall to thereby support the shelves on the back wall. The shelves are attachable to the back wall at a plurality of different heights, and at a plurality of different side-to-side positions. The slots in the upper and lower inserts are configured such that the shelves must be rotated to be removed from the back wall and the amount of rotation required to remove them from the back wall is less than 30°.

According to yet another embodiment of the present invention, a display stand is provided that includes a generally vertical back wall, a plurality of shelves, and a plurality of shelf brackets. The back wall has a front face, a back face, and first and second sides. The front face includes a plurality of slots. The shelves are adapted to be releasably attachable to the front face of the back wall by way of the shelf brackets. Each of the shelf brackets includes at least one insert adapted to fit into at least one of the slots to thereby support an associated shelf on the back wall. Each shelf bracket is attachable to the associated shelf in a plurality of different configurations such that the shelf bracket can support the associated shelf in a plurality of different orientations with respect to the back wall.

According to other aspects of the present invention, each shelf may include a shelf base and a shelf tray, wherein the shelf base is insertable into at least one of the slots on the slot wall and the shelf tray is releasably attachable to the shelf base. The shelf base may be designed such that it can accommodate a plurality of different styles of shelf trays that are interchangeable with a given shelf base. These styles may include trays having dividers adapted to separate product supported on the shelf, as well as trays that lack such dividers. The trays may be slidingly coupled to the shelf bases such that they can slide forward on the shelf base to allow them to be more easily accessed. The display stand may further include one or more signs that can be coupled to the back wall at different locations. The signs may include a graphic panel and at least one light positioned behind the graphic panel in order to illuminate the graphic panel. End

walls may further be attached to the back wall, as well as a plurality of divider panels that may be attached at any desirable side-to-side position on the back wall. A cabinet may also be attached to the back wall at any desired location. Doors may be included on the display stand such that the contents of the display stand cannot be accessed without opening the doors. The doors preferably can be locked and may open either by pivoting about a vertical axis or by sliding along tracks.

The display stand of the present invention provides a number of advantages over prior display stands. The display stand of the present invention can be configured in virtually an unlimited number of different manners so that users of the display stand can individually tailor it to their own specifications. This individual tailoring includes the selection and placement of different types of shelves, the selection and placement of cabinets, signs, lights, product dispensers, literature dispensers, and other items that may be incorporated into the display stand. Once a given configuration of the display stand has been chosen and implemented, changes to this configuration can be made quickly and easily, if desired. Additionally, the slots on the back wall of the display stand and the inserts on the shelves, and other items, may be shaped in a nonstandard manner so that conventional shelving may not fit into the slots, thereby discouraging retailers from using the display stand to display other types of products. These and other advantages of the present invention will be apparent to one skilled in the art from the following specification when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a display stand according to one embodiment of the present invention;

FIG. **2** is a perspective view of a back wall and base of the display stand;

FIG. **3** is a perspective view of a frame of the display stand;

FIG. **4** is a perspective view of the frame, base, an end panel, and a plurality of overhead lights and light brackets;

FIG. **5** is a partial, elevational view of the upper portion of the components of FIG. **4**;

FIG. **6** is a partial, elevational view of the lower portion of the components of FIG. **4**;

FIG. **7** is a side, elevational view of the frame;

FIG. **8** is a side, elevational view of a double hanger rail of the frame;

FIG. **9** is a side, elevational view of a single hanger rail of the frame;

FIG. **10** is a perspective view of a portion of the slot wall;

FIG. **11** is a side, elevational view of the slot wall;

FIG. **12** is a perspective view of the base illustrated without a cover;

FIG. **13** is a perspective view of the base illustrated with a cover;

FIG. **14** is a perspective view of a foot in the base;

FIG. **15** is a perspective view of a leveler extension bracket;

FIG. **16** is a side, elevational view of the bracket of FIG. **15**;

FIG. **17** is a perspective view of a front rail of the base;

FIG. **18** is a side, elevational view of the rail of FIG. **17**;

FIG. **19** is a perspective view of an end panel;

FIG. **20** is a partial, side elevational view of a light bracket shown attached to the top end of the back wall;

FIG. **21** is a perspective view of the light bracket of FIG. **20**;

FIG. **22** is another perspective view of the light bracket taken from another angle;

FIG. **23** is a perspective view of a cover for the light bracket;

FIG. **24** is a side, elevational view of a light bar for the light bracket of FIG. **20**;

FIG. **25** is a side, elevational view of a top wall extrusion;

FIG. **26** is a side, elevational view of an illuminated sign and sign bracket;

FIG. **27** is a perspective view of the illuminated sign and sign bracket of FIG. **26** illustrated with end covers attached;

FIG. **28** is a perspective view of the sign bracket;

FIG. **29** is a perspective view of a back wall of the illuminated sign;

FIG. **30** is a side, elevational view of the back wall of FIG. **29**;

FIG. **31** is a side, elevational view of the illuminated sign shown with the end cover removed;

FIG. **32** is a side, partial, elevational view of the area labeled XXXII in FIG. **31**;

FIG. **33** is a perspective view of a light panel that fits within the illuminated sign of FIG. **26**;

FIG. **34** is a side, elevational view of the light panel of FIG. **33**;

FIG. **35** is a perspective view of the end cover for the illuminated sign;

FIG. **36** is a partial, side, elevational view of a plurality of shelves shown attached to the slot wall;

FIG. **37** is a partial, side, elevational view of the shelves of FIG. **36** illustrated with a middle shelf tipped upward to a slot wall removal position.

FIG. **38** is a perspective view of the top of a shelf base;

FIG. **39** is a perspective view of the under side of the shelf base;

FIG. **40** is a sectional view of the shelf base taken along the line XL—XL in FIG. **42**;

FIG. **41** is a front, elevational view of the shelf base;

FIG. **42** is a plan view of the shelf base;

FIG. **43** is a sectional view of the shelf base taken along the line XLIII—XLIII in FIG. **42**;

FIG. **44** is a perspective view of a cover for the shelf base;

FIG. **45** is perspective view of a divided shelf tray;

FIG. **46** is a side, elevational view of the divided shelf tray of FIG. **45**;

FIG. **47** is a front, elevational view of the shelf tray of FIG. **45**;

FIG. **48** is a perspective view of the divided shelf tray attached to the shelf base;

FIG. **49** is a plan view of the divided shelf tray and shelf base of FIG. **48**;

FIG. **50** is a perspective view of a shelf bracket;

FIG. **51** is a side, elevational view of the shelf bracket of FIG. **50**;

FIG. **52** is a sectional view of the shelf base, shelf tray, and bracket taken along the line LII—LII in FIG. **49** illustrating the shelf in a first orientation;

FIG. **53** is a side, elevational view of the shelf base, shelf tray, and shelf bracket, similar to FIG. **52** but illustrating the shelf bracket in a second orientation;

FIG. **54** is a perspective view of an undivided shelf tray;

FIG. **55** is a side, elevational view of the shelf tray of FIG. **54**;

FIG. **56** is a perspective view of the undivided shelf tray shown attached to the shelf base;

FIG. **57** is a perspective view of a waterfall shelf tray;

FIG. **58** is a side, partial, elevational view of the waterfall tray shown attached to the slot wall;

FIG. **59** is a perspective view of a divider panel bracket;

FIG. **60** is a side, elevational view of the divider bracket of FIG. **59**;

FIG. **61** is a plan view of the divider panel bracket of FIG. **59**;

FIG. **62** is a side, elevational view of a divider panel;

FIG. **63** is a perspective view of a cabinet side wall;

FIG. **64** is a perspective view of a cabinet bracket;

FIG. **65** is a side, elevational view of the cabinet bracket;

FIG. **66** is a perspective view of a basket;

FIG. **67** is a side, elevational view of the basket of FIG. **66**;

FIG. **68** is a perspective view of a utility pole supporting a literature holder and a light box;

FIG. **69** is a plan view of the utility pole, literature holder, and light box of FIG. **68**;

FIG. **70** is a perspective view of a utility pole bracket;

FIG. **71** is a perspective view of a literature holder bracket;

FIG. **72** is a front, perspective view of a gravity fed product dispenser shown attached to the utility pole;

FIG. **73** is a rear, perspective view of the gravity fed, product dispenser and utility pole of FIG. **72**;

FIG. **74** is a plan view of the dispenser and utility pole of FIG. **72**;

FIG. **75** is a perspective view of the bracket for the gravity fed product dispenser;

FIG. **76** is a side, elevational view of a shelf light support;

FIG. **77** is a plan view of the shelf light support of FIG. **76**;

FIG. **78** is a perspective view of a tap plate;

FIG. **79** is a perspective view of a pair of security doors;

FIG. **80** is a perspective view of a top member of the security door frame;

FIG. **81** is a perspective view of a bottom member of the security door frame;

FIG. **82** is a perspective view of a rear, bottom track segment for sliding doors;

FIG. **83** is a perspective view of a rear, top track segment for the sliding doors;

FIG. **84** is a perspective view of a front, bottom track segment for the sliding doors;

FIG. **85** is a perspective view of a front, top track segment for the sliding doors;

FIG. **86** is a partial, perspective view of the slot wall and an electrical outlet;

FIG. **87** is a partial, perspective, exploded view of the slot wall and electrical outlet illustrating an optional cap for the outlet;

FIG. **88** is a perspective view of the display stand illustrating sliding doors attached in their closed position;

FIG. **89** is a perspective view of the display stand illustrating sliding doors attached and moved to an open position.

FIG. **90** is a perspective view of a light box and bracket for supporting the light box directly on the slot wall; and

FIG. **91** is a side, elevational view of the light box and bracket of FIG. **90**.

DETAILED DESCRIPTION OF THE INVENTION

The present invention will now be described with reference to the accompanying drawings where the reference numerals in the following written description correspond to like-numbered elements in the several drawings. A display stand **100** according to one embodiment of the present invention is depicted in FIG. **1**. Display stand **100** includes a pair of vertical end panels **102** positioned at the ends of stand **100**, a plurality of shelves **104**, a cabinet **106**, a plurality of illuminated top signs **108**, a plurality of interior signs or light boxes **526**, and a gravity fed product dispenser **112**. A pair of vertical divider panels **114** divide the shelves into a plurality of columns. One or more light brackets **116** may also be included along the top of display stand **100** to support the lights that help illuminate the product positioned on the shelves. While display stand **100** can be used to support any type of products, the illustrated embodiment is especially suited for supporting and displaying cigarette packs and cartons. The containers of cigarettes may be positioned on the shelves **104**, in the dispenser **112**, and in the cabinet **106**.

All of the aforementioned components of display stand **100** are mounted onto a back wall **118** that is supported on a base **120** (FIG. **2**). Back wall **118** is made up of a slot wall **122** secured to a frame **124**. Frame **124** is, in turn, secured to base **120**. Slot wall **122** includes a plurality of parallel, generally horizontal elongated slots **126** defined on a front **128** of back wall **118**. Slots **126** are continuous and extend all the way from a first side **130***a* to an opposite side **130***b*. It will be understood that slots **126** could alternatively extend for only a portion of the way between sides **130***a* and **130***b*. Still further, slots **126** could be interrupted in one or more locations so that they are not continuous from one side **130***a* to another side **130***b*.

Slots **126** are used to releasably secure and support the various components of display stand **100** on back wall **118**. Specifically, slots **126** are used to support shelves **104**, end panels **102**, cabinet **106**, top signs **108**, interior signs **526**, product dispenser **112**, divider panels **114**, and light brackets **116**. While the precise manner in which all of these components are supported on slot wall **126** will be described in more detail below, they all generally include one or more inserts that fit into one or more of the slots **126** on back wall **118**. The insertion of these inserts into slots **126** allows the components to be hung on slot wall **122**. Because the slots **126** in the illustrated embodiment extend all the way from one side **130***a* to another side **130***b*, the components can be hung in any side-to-side location between sides **130***a* and *b*. The components can also be hung at different heights by selecting slots **126** that are at the desired height for locating the display stand component.

Slot wall **122** thus provides a virtual blank slate for assembling display stand components thereon. The purchaser or user of display stand **100** has complete freedom in configuring display stand **100**. For example, if the user of display stand **100** did not want to include cabinet **106**, he or she could simply remove cabinet **106** from slot wall **122** and replace it with a different display stand component. The replacement display stand component could be one or more shelves **104**, one or more interior signs **526**, one or more product dispensers **112**, or other items, or a combination of these items. Alternatively, if the user desired to have more than one cabinet **106**, additional cabinets could be added in any desired location. The number of components, as well as their location, can thus be completely custom defined by the user of display stand **100**. In addition, the size of display stand **100** can be easily varied. While the back wall **118** depicted in FIG. **2** may have a standard length, such as four feet, longer display stands **100** can be created by simply placing one or more back walls **118** and their associated bases **120** next to each other in an end to end manner. Any size length of display stands **100** can therefore be created

that has a length that is an integer multiple of the standard length of a single back wall **118**. The standard length of back wall **118** can, of course, be varied from the four foot length mentioned above.

The construction of frame **124** is depicted in more detail in FIG. **3**. Frame **124** includes a pair of vertical posts **132** that are positioned at each end of frame **124**. Posts **132** are oriented generally parallel to each other. Posts **132** are connected to each other by way of a plurality of horizontal, double hanger rails **134**. A single hanger rail **136** is positioned adjacent the bottom of frame **124**. Posts **132**, double hanger rails **134**, and single hanger rail **136** may all be manufactured from a suitable metal, such as steel. Other materials are also possible. Hanger rails **134** and **136** may be attached to posts **132** by any suitable means, such as rivets, screws, welding, or other means. Hanger rails **134** and **136** are used to support slot wall **122** on frame **124**. More specifically, double hanger rails **134** each include an upper flange **138** and a lower flange **140** (FIG. **8**). Each flange **138** and **140** fits into a rear slot **142** defined on the back of slot wall **122** (FIG. **20**). Similarly, single hanger rail **136** includes a flange **144** that fits into one of the rear slots **142** on slot wall **122** (FIG. **9**). The flanges on rails **134** and **136** thus secure slot wall **122** to frame **124**. In order to insert flanges **138**, **140**, and **144** into rear slots **142** on slot wall **122**, the slot wall **122** must be positioned adjacent one of the sides **130***a* or **130***b* of frame **124** such that the flanges are in alignment with rear slots **142**. The slot wall **122** is then slid across frame **124** from one side **130***a* towards another side **130***b*. Slot wall **122** is slid until it is centered between posts **132** on frame **124**. Once in this position, slot wall **122** is securely attached to frame **124** via hanger rails **134** and **136**. In order to remove slot wall **122** from frame **124**, it must be slid off one of the sides **130***a* or *b* of frame **124**. A rear panel **125** may be attached by suitable means to the back side of frame **124**.

While the accompanying drawings illustrate only a single slot wall **122** attached to frame **124** (e.g. FIG. **2**), it will be understood that slot wall **122** may be comprised of a number of individual, smaller sized slot wall segments. This may be done in order to allow slot wall **122** to be more easily manufactured. While slot wall **122** can be made from any suitable material, it may advantageously be extruded from plastic. As such, it may be easier to manufacture sections of slot wall **122** having heights and widths that are less than that depicted in FIG. **2**. In such a case, each section of the slot wall **122** is attached to frame **124** via hanger rails **134** and **136**. Each slot wall section is suitably tall such that it will encompass at least one set of hanger rails **134** or **136**, although more preferably at least two sets of rails **134** and **136**. Thus, each section of the slot wall will be secured to frame **124** by way of rails **134** and **136**. While the height of display stand **100** can be any desired height, the invention specifically contemplates heights ranging anywhere from three feet up to eight feet, or more. A sufficient number of slot wall segments are attached to frame **124** to cover the front of frame **124**, regardless of its height.

Base **120**, which is illustrated in more detail in FIGS. **2**, **4**, and **12–18**, includes a pair of feet **146** that are connected together by a front rail **148**. Base **120** may further include an optional cover **150** that helps conceal the interior space surrounded by feet **146** and front rail **148**. As illustrated more clearly in FIG. **12**, feet **146** are positioned at either end of front rail **148** and are oriented generally parallel to each other. Front rail **148** is oriented generally perpendicular to each foot **146**. Front rail **148**, which is depicted in detail in FIG. **17**, is secured to each foot **146** by welding, or other suitable methods of attachment. Each foot includes a horizontal plate **152**, a vertical side plate **154**, and a vertical back plate **156** (FIG. **14**). Each of the plates **152–156** may be formed by bending a blank sheet of metal. A pair of square apertures **158** are defined in vertical back plate **156** and are vertically aligned with each other. Square apertures **158** are used to secure base **120** to the posts **132** of frame **124**. Specifically, each post **132** is positioned on top of horizontal plate **152** of each foot **146** in front of vertical back plate **156**. When so positioned, square apertures **158** and vertical back plate **156** are aligned with a pair of post apertures **160** defined near the bottom of each of posts **132** (FIG. **3**). A pair of carriage bolts may then be inserted through each pair of square apertures **158** into post apertures **160** in posts **132**. The insertion of these bolts through square apertures **158** into post apertures **160** secures base **120** to post **132** and thus to frame **124** and the entire back wall **118**.

In the embodiment of display stand **100** depicted in FIG. **1**, there are two bases **120** attached to two frames **124**. One frame **124** and one base **120** are positioned alongside of the other base **120** and frame **124**. Each frame and base may have a standard length in which they are manufactured, such as four feet, although other lengths may be used. A display stand having any integer multiples of this standard length can then be easily constructed by positioning the selected number of frames and bases next to each other. Different sized display stands **100** can therefore be easily constructed.

In some instances, it may be desirable to provide additional front-to-back stability for display stand **100**. A pair of leveler extension brackets **162** may be used for this purpose (FIGS. **15–16**). Each leveler extension bracket **162** includes a bottom plate **164**, a side plate **166**, and a rear plate **168**. Bottom plate **164** is positioned horizontally when leveler extension bracket **162** is attached to feet **146**. Rear plate **168** includes a pair of square apertures **170**. When used, square apertures **170** of leveler extension bracket **162** align with square apertures **158** of feet **146**, which are also aligned with post apertures **160** of posts **132**. In order to attach leveler extension bracket **162** to base **120**, the carriage bolts that are inserted through square apertures **158** and post apertures **160** are also inserted through square apertures **170** in leveler extension bracket **162**. When in use, rear plate **168** of leveler bracket **162** is positioned in contact with, and directly behind, vertical back plate **156** of foot **146**. Bottom plate **164** of leveler bracket **162** is positioned such that it extends rearwardly away from frame **124**. Leveler bracket **162** is then secured to feet **146** and post **132** by way of the carriage bolts. The rearward extension of bracket **162** from frame **124** provides additional resistance to tipping of stand **100**.

Bottom plate **164** of leveler bracket **162** includes a threaded aperture **172** (FIGS. **15–16**). A threaded screw, or other structure having an enlarged head, may be inserted through threaded aperture **172**. By appropriately rotating the screw, or other structure, the distance of its head from bottom plate **164** can be adjusted. Further, by rotating this screw, or other structure, the height of the attached post **132** can be adjusted. By appropriately rotating this screw in both brackets **162**, display stand **100** can be set up such that it is horizontally level regardless of any irregularities in the surface on which it is positioned. Each foot **146** further includes a front aperture **176** and a rear aperture **174** that are both threaded and which may be used to receive screws, or other structures, that allow additional leveling adjustments to be made to stand **100** (FIG. **14**).

Front rail **148** of base **120** is depicted in more detail in FIGS. **17** and **18**. Front rail **148** includes a curved front **178** and a stepped back **180**. The stepped back **180** further

includes a horizontal wall **686** that is used to partially secure the end panels **102** to display stand **100**. As illustrated in FIG. **19**, end panel **102** includes an upper bracket **184**, a middle bracket **186**, and a lower bracket **188**. Each bracket **184**–**188** includes a perpendicular flange **190** having a plurality of fastener holes **192** defined therein. The fastener holes **192** receive screws, rivets, or any other suitable fastener for securing the brackets **184**–**188** to one of the posts **132**. Specifically, these fasteners are inserted through fastener holes **192** and into the back side of the post **132**. In addition to being attached to one of the posts **132**, each bracket **184**, **186**, and **188** is attached to end panel **102**. End panel **102** may be constructed out of wood, or any other suitable material. Screws, or any other suitable fasteners may be used to secure brackets **184**, **186**, and **188** to end panel **102**.

In addition to brackets **184**, **186**, and **188**, end panel **102** further includes a front, lower bracket **194**. Front lower bracket **194** includes a bottom, horizontal flange **196** that has an aperture defined in it. When end panel **102** is attached to display stand **100**, bottom, horizontal flange **196** is positioned on top of horizontal wall **686** of front rail **148**. Bottom flange **196** may be secured thereto by a screw, rivet, welding, or any other suitable fastening technique (FIGS. **6** and **19**).

The attachment of an upper light bracket **116** to back wall **118** is depicted in more detail in FIG. **20**. Upper light bracket **116** attaches to the top end of back wall **118**. The rear portion of light bracket **116** includes an upper insert **198** and a lower insert **200**. Lower insert **200** fits into one of the slots **126** defined in slot wall **122**. More specifically, lower insert **200** fits into one of a plurality of small slots **202** defined in slot wall **122**. As illustrated in FIGS. **10**–**11** and **20**, the slots **126** defined in slot wall **122** are of two different types. These include small slots **202** and large slots **204**. Small slots **202** and large slots **204** are arranged in slot wall **122** in a vertically, alternating fashion. Small slots **202** extend into slot wall **122** a smaller amount than large slots **204**. Small slots **202** are also angled downwardly into slot wall **122**, while large slots **204** are angled upwardly into slot wall **122**. Because the shapes of slots **202** and **204** are not standard, standard shelving that may be more suitable for supporting products not intended to be displayed on stand **100** are less likely to be positioned on stand **100**. Slots **202** and **204** thus act to deter using stand **100** for displaying undesired products. The use of small slots **202** and large slots **204** will be described in more detail below.

As mentioned above, one of the lower inserts **200** on light bracket **116** fits into the second highest small slot **202** defined in slot wall **122** (FIG. **20**). The upper insert **198** on light bracket **116** fits into a forward channel **206** defined in a top wall extrusion **208**. Top wall extrusion **208** is fixedly attached to the top of back wall **118** by any suitable technique, such as riveting, welding, or other means. While top wall extrusion **208** is referred to as an extrusion, and indeed may be manufactured using an extrusion process, it will be understood that it could be constructed using other techniques. In fact, all parts referred to herein as "extrusions" can be made using an extrusion process, or some other manufacturing process.

Top wall extrusion **208** includes a front lower arm **210** and an intermediate lower arm **212** (FIGS. **20** and **25**). Intermediate lower arm **212** hooks into one of the rear slots **142** defined on the back side of slot wall **122**. Intermediate lower arm **212** thus helps secure the top end of slot wall **122** to frame **124**. Front lower arm **210** of top wall extrusion **208** includes an upper finger **214** and a lower finger **216**. Lower finger **216** fits into the upper-most small slot **202** defined in slot wall **122** (FIG. **20**). The engagement of lower finger **216** in this small slot **202** helps to further secure extrusion **208** to slot wall **122**, which in turn secures slot wall **122** to frame **124**. Upper finger **214** of front lower arm **210** functions to hold light bracket **116** on back wall **118** in a snap-fitting manner. Specifically, upper insert **198** of light bracket **116** includes a shoulder **218** that initially engages the tip of upper finger **214** when bracket **116** is attached to back wall **118**. This engagement forces shoulder **218** to flex until shoulder **218** moves past upper finger **214**. Once shoulder **218** has moved past upper finger **214**, shoulder **218** snaps back to its unflexed condition. Thereafter, light bracket **116** cannot be removed from the top of back wall **118** without manually flexing shoulder **218** to allow it to be extracted past upper finger **214**.

The attachment of light bracket **116** to the top of back wall **118** is thus accomplished by first inserting upper insert **198** into front channel **206** of top wall extrusion **208**. After being inserted therein, the front end of light bracket **116** is pivoted downwardly, which causes shoulder **218** to push against upper finger **214**. By applying sufficient downward force on the front end of light bracket **116**, shoulder **218** can be snapped past upper finger **214**. As this occurs, lower insert **200** fits into one of the small slots **202** defined in slot wall **122**. Once light bracket **116** is attached to back wall **118** in this manner, it cannot be removed by simply lifting the light bracket **116** vertically. Rather, as has been mentioned above, shoulder **218** must be manually flexed to allow it to be retracted past upper finger **214**. Shoulder **218** is preferably made out of a suitably flexible material, such as plastic. The snap-fitting attachment of light bracket **116** to back wall **118** provides a firm and secure connection between these two items.

Each light bracket **116** supports one end of a horizontal light bar **220** which, in turn, supports one or more fluorescent light bulbs. These light bulbs provide illumination to products being displayed on stand **100**. Horizontal light bar **220** is supported at a front end **222** of light bracket **116**. Three screw holes **224** are defined in the front end **222** of each light bracket **116**. When light bar **220** is supported by light brackets **116**, screw holes **224** are aligned with three screw bosses **226** defined in light bar **220**. In order to secure horizontal light bar **220** to brackets **116**, screws are inserted through each screw hole **224** into a corresponding screw boss **226** and tightened. Light bars **220** are further supported by light brackets **116** by partially fitting into an enclosure **228** defined in light brackets **116** (FIG. **21**). Enclosure **228** includes a bottom wall **230** on which the ends of light bar **220** rest. Each light bar **220** is thus firmly attached to a pair of light brackets **116**. Light bars **220** may be manufactured in one or more standard lengths. Depending on the length of display stand **100**, more than one light bar may be attached using brackets **116** to ensure that light is provided to the entire top of stand **100**.

Light bar **220** further includes an upper slot **232** and a lower slot **234**. Upper and lower slots **232** and **234** receive a plate **236** (FIG. **20**). A fixture **238** for a fluorescent light bulb is mounted on plate **236**. When plate **236** is mounted to light bar **220** via upper and lower slots **232** and **234**, a front enclosure **240** is defined. Front enclosure **240** provides a space for a ballast (not shown) for the fluorescent light bulb fixture **238**. Electrical cords may also be positioned in front enclosure **240** and run along light bar **220** to either of the light brackets **116**. Once the wires reach the light bracket **116**, they may be positioned in a wire channel **242** defined in bracket **116**. Wire channel **242** extends for substantially the entire length of bracket **116**. A wire aperture **244** is

defined on the top of bracket **116** adjacent its back end. Wire aperture **244** provides an aperture out of which the wires in bracket **116** may extend. From wire apertures **244**, the wires may be inserted into power outlets connected to an electrical box positioned on the back of display stand **100**, which will be discussed in more detail below.

In order to conceal the wires in bracket **116**, as well as to provide a more visually appealing appearance for brackets **116**, a cover **246** may be attached to each bracket **116** (FIG. **23**). Cover **246** includes a plurality of tabs **248** that may be snap-fit into a plurality of tab apertures **250** defined on bracket **116**. Cover **246** is preferably made from a generally flexible material, such as plastic. By pushing cover **246** into bracket **116**, cover **246** will flex sufficiently to allow tabs **248** to move into tab apertures **250**, where the tabs **248** will return to their unflexed position. Removal of cover **246** is thereafter prevented by the tabs **248** being inserted into tab apertures **250**. In order to remove cover **246**, it must be sufficiently flexed such that tabs **248** are flexed out of tab apertures **250**.

As illustrated in FIG. **1**, display stand **100** includes a plurality of top signs **108**. The construction of top signs **108** and their manner of attachment to back wall **118** will now be described. Each top sign **108** includes at least one sign bracket **252**, a back wall **254**, a graphic display panel **256**, and a light panel **258** (FIGS. **26–35**). Sign bracket **252** is mounted to the top of back wall **118**. More specifically, sign bracket **252** includes a bottom wall **262** having a pair of apertures **264** defined therein (FIG. **28**). Each aperture **264** is an unthreaded aperture. A screw is inserted through each aperture **264** into a tap plate **266** positioned underneath bottom wall **262** (FIG. **26**). Tap plate **266** is positioned within a top channel **268** defined on the top of top wall extrusion **208** (FIG. **25**). Top channel **268** is more specifically defined by a front wall **270** and a back wall **272**. Both front wall **270** and back wall **272** include a lip **274**. Lips **274** are positioned closer to each other than front wall **270** and back wall **272** are. Thus, the width of top channel **268** between front and back walls **270** and **272** is greater than the width of top channel **268** between lips **274**.

Tap plate **266** preferably has a length that is greater than the distance between lips **274**, but slightly less than the distance between front and back walls **270** and **272**. The width of tap plate **266** may be less than the distance between lips **274** such that the plate may be dropped into channel **268** when its width dimension is transverse to the length of the channel. Thereafter, the plate is rotated so that its width dimension is aligned with the length of the channel. Alternatively, tap plate **266** can be inserted into top channel **268** from one of the ends of extrusion **208** and then slid to the appropriate side-to-side location along extrusion **208**. In either situation, tap plate **266** cannot be removed from top channel **268** by simply lifting it vertically because its length is greater than the distance between adjacent lips **274**. Tap plate **266** further includes a threaded aperture **276** defined in its center (FIG. **78**). The screws that pass through apertures **264** in the bottom wall **262** of sign bracket **252** also pass through the threaded apertures **276** in tap plate **266**. As the screws are tightened, tap plate **266** is moved closer and closer to bottom wall **262** of sign bracket **252**. After sufficient rotation of the screws, tap plate **266** comes firmly into contact with lips **274** and tightly squeezes thereagainst. When the screws are fully tightened, lips **274** are sandwiched between the bottom of bottom wall **262** and the top of tap plate **266**. This sandwiching secures sign bracket **252** to extrusion **208**.

While tap plate **266** may have a rectangular shape, it may also be shaped like that illustrated in FIG. **78**. Tap plate **266** in FIG. **75** includes two square corners **278** and two round corners **280**. Tap plate **266** includes a width W and a length L. Length L is greater than width W. When a tap plate **266** is to be used to secure sign bracket **252** to extrusion **208**, the length L of tap plate **266** should be approximately equal to the distance between front wall **270** and back wall **272**. Further, the width W of tap plate **266** should be slightly less than the distance between the lips **274** on front and back walls **270** and **272**. Thus, tap plate **266** can be inserted into top channel **268** by rotating it such that its length L is parallel to the longitudinal extent of top channel **268**. Once in top channel **268**, tap plate **266** is rotated such that its length L is perpendicular to the longitudinal extent of top channel **268**. In this position, tap plate **266** cannot be vertically removed from top channel **268** because lips **274** prevent any upward movement of tap plate **266**.

The rotation of tap plate **266** after it has been inserted into top channel **268** is permitted by round corners **280**. Specifically, round corners **280** allow tap plate **266** to be rotated 90° in the direction C (FIG. **78**). Once tap plate **266** has been rotated 90° in this direction, square corners **278** come into contact with front wall **270** and back wall **272**. This contact prevents further rotation of tap plate **266**. Thus, as the screw through threaded aperture **276** is continually tightened, tap plate **266** is no longer permitted to rotate. The continued rotation of this screw causes tap plate **266** to rise upwardly towards lips **274** until it is firmly in contact with lips **274** and sign bracket **252** is securely held in top channel **268**. The attachment of sign bracket **252** can thus be easily carried out by first inserting screws through apertures **264** into a pair of tap plates **266**. Tap plates **266** are then rotated until their length L dimension is parallel to the longitudinal extent of top channel **268**. They are then inserted into top channel **268** and the screws are tightened. This tightening causes the tap plates **266** to rotate until the square corners **278** come into contact with front and back walls **270** and **272**. Further tightening locks sign bracket **252** in top channel **268**.

Sign bracket **252** further includes a pair of upper apertures **282** and a pair of lower apertures **284** (FIG. **28**). Upper and lower apertures **282** and **284** are used to secure sign bracket **252** to back wall **254**. Upper and lower apertures **282** and **284** are each defined in a pair of spaced apart arms **286**. The distance between arms **286** is slightly less than the distance between a pair of flanges **288** defined on back wall **254** (FIG. **29**). Flanges **288** thus engage the outside of each of the arms **286**. Flanges **288** each include an aperture **290** and a track **292**. When back wall **254** is attached to sign bracket **252**, the aperture **290** in flanges **288** align with the upper apertures **282**. Still further, the lower apertures **284** in sign bracket **252** align with track **292**.

A weld nut or clinch nut **294** is affixed to each of the arms **286** adjacent each of the upper and lower apertures **282** and **284** (FIG. **28**). These nuts **294** are internally threaded. A thumb screw (not shown), or the like, may be inserted through each of the apertures **290** into each of the upper apertures **282** and into the adjacent nut **294**. Likewise, a thumb screw may be inserted through track **292** into lower aperture **284** and into the adjacent nut **294**. Thus, four thumb screws, or the like, may be provided. By tightening these thumb screws, back wall **254** is held in place on sign bracket **252**.

Track **292** allows the orientation of back wall **254** to pivot with respect to sign bracket **252**. This allows the orientation of top sign **108** to be adjusted as desired. In order to adjust this orientation, the thumb screws that are inserted through

tracks **292** and lower apertures **284** are loosened. If necessary, the thumb screws through apertures **290** and upper apertures **282** are also loosened. Upon sufficient loosening, back wall **254** will be able to pivot about a horizontal axis that passes through upper apertures **282** and apertures **290**. Once back wall **254** has been pivoted to the desired position, the thumb screws that are inserted through tracks **292**, lower apertures **284**, and the adjacent nuts **294** are tightened. This tightening holds back wall **254** in the desired orientation with respect to sign bracket **252**. The thumb screws through apertures **290** and upper apertures **282** may also be tightened for added resistance to unintentional rotation of back wall **254**.

Back wall **254** includes a plurality of air vents **296** defined therein (FIG. **29**). Air vents **296** allow air to pass through back wall **254** to thereby provide cooling to the lights that may be contained within top sign **108**. Back wall **254** further includes a wire aperture **298** defined between flanges **288**. Wire aperture **298** receives one or more wires that run into top sign **108** to provide power to the lights contained therein. Preferably, although not necessarily, the one or more wires exiting out of wire aperture **298** passed down bracket **252** between arms **286**. A center panel **300** of bracket **252** conceals these wires from view. From the bottom of sign brackets **252**, the one or more wires may be connected to a power outlet positioned on an electrical box attached to the back of back wall **118**, as will be described in more detail herein.

Back wall **254** of top sign **108** further includes an upper channel **302** and a lower channel **304** (FIGS. **29** and **30**). Upper and lower channels **302** and **304** are provided to hold graphic display panel **256**. Graphic display panel **256** is a flexible panel that may include advertising, or any other desirable picture, words, symbols, or other indicia. Preferably, graphic display panel **256** is at least partially translucent to allow light from the light bulbs position therebehind on light panel **258** to illuminate it. If display stand **100** is being used to support and display cigarettes and tobacco products, graphic panel **256** may include advertising for the particular brand or brands of cigarette products being displayed. As mentioned above, graphic display panel **256** is preferably made from a flexible material. Graphic display panel **256** is inserted into upper and lower channels **302** and **304** by sufficiently flexing the panel **256** until it fits into these channels. After being positioned in these channels, the display panel **256** returns to its generally unflexed position. Because the distance between upper and lower channels **302** and **304** is less than the height of the unflexed graphic display panel **256**, it bows outwardly, as illustrated in FIGS. **27** and **31**–**32**. This bowing of the panel **256** creates sufficient pressure to maintain panel **256** in channels **302** and **304**.

Light panel **258** includes a plurality of fixtures **306** for holding a plurality of fluorescent light bulbs **308** (FIGS. **33**–**34**). As mentioned previously, light bulbs **308** illuminate the back side of graphic panel **256**. Light panel **258** further includes an upper flange **310** and a lower flange **312**. A screw hole **314** is defined in upper flange **310** generally midway between the two ends of upper flange **310**. Screw hole **314** receives a screw **318** which is used to secure light panel **258** inside of top sign **108** (FIGS. **31**–**32**). Screw **318** is inserted through a screw hole **316** defined in back wall **254** (FIG. **29**) and into screw hole **314** defined in light panel **258**. The screw hole **314** defined in light panel **258** is threaded, or the screw may be self tapping, such that tightening of the screw **318** causes upper flange **310** to be securely fastened to back wall **254**. This is illustrated in more detail in FIG. **32**.

Lower flange **312** of light panel **258** rests against the bottom of back wall **258** adjacent lower channel **304**, as illustrated in more detail in FIG. **31**. This helps hold light panel **258** inside of top sign **108**. Ballasts, and any other electrical components that are necessary to operate fluorescent light bulbs **308**, may be positioned behind light panel **258** and in front of back wall **254**. In order to conceal light panel **258** from view, a cover **320** may be positioned on each end of top sign **108**. Cover **320** is illustrated in more detail in FIG. **35**. Cover **320** includes a flat body **322** that is surrounded by a peripheral wall **324**. Cover **320** may be made out of a flexible material, such as any suitable plastic. Peripheral wall **324** fits over the end of top sign **108** and is suitably dimensioned to be frictionally retained thereon.

As illustrated in FIG. **1**, display stand **100** may include one or more top signs **108**. In the embodiment of FIG. **1**, there are three top signs **108**. The two top signs **108** depicted on the ends of display stand **100** each include a single sign bracket **252**. The top sign **108** positioned in the middle of display stand **100** includes a plurality of sign brackets **252**. More than one sign bracket **252** may be required for a given top sign **108**, depending upon the length of the top sign **108**. If a user wishes to display an exceptionally long graphic panel **256**, he or she may mount two or more top signs **108** next to each other on display stand **100**. The top signs **108** that are mounted next to each other have their covers **320** removed, except at the two outermost ends of the collection of top signs **108**. A single graphic panel is then inserted into each of these top signs in the upper and lower channels **302** and **304** of the back walls **254**. By stringing together a series of top signs **108** in this manner, graphic display panels **256** having any length that are integer multiples of the lengths of top signs **108** may be displayed. FIG. **1** illustrates a graphic display panel in the center of the display stand **100** that stretches across a pair of side-to-side top signs **108** that each have a pair of sign brackets **252**. By selectively placing top signs **108** of different lengths on top of display stand **100**, as well as combining a single graphic display panel **256** across multiple top signs **108**, the user of display stand **100** has a great deal of freedom in configuring the look of material displayed via top signs **108** on display stand **100**. Of course, if a user desires to not utilize top signs **108** at all on display stand **100**, he or she is free to do so.

FIGS. **36**–**58** illustrate the various different types of shelves **104**, as well as the different components that make up the shelves **104**. The present invention contemplates the use of multiple different styles of shelves, as well as different dimensions for each different style of shelf. Three different styles of shelves are depicted in FIGS. **36**–**58**. FIGS. **45**–**49** illustrate the components of a divided shelf **104***a*. FIGS. **54**–**56** illustrate the components of an undivided shelf **104***b*. FIGS. **57**–**58** illustrate a waterfall shelf **104***c*. As mentioned, each of these different styles of shelves can come in various different dimensions. The embodiment of display stand **100** depicted in FIG. **1** includes different size waterfall shelves **104***c* and different sized divided shelves **104***a*. As will be discussed in more detail below, the divided shelves **104***a* include dividers for separating products displayed on the shelves. If display stand **100** is used for displaying cigarette packs, these dividers are preferably spaced apart a distance generally equal to the width of the cigarette packs that are displayed thereon. The dividers thus divide the cigarette packs on the shelf into rows of cigarette packs. The undivided shelves **104***b* do not include dividers for separating products. If these are used to display cigarette products, they may advantageously be used to support cartons of cigarettes, although other uses can be made. The waterfall shelves **104***c*

are angled downwardly to a greater extent than the other shelves and may be used to display either cigarette packs, cigarette cartons, or any other type of product that may be desirably displayed on stand **100**. The construction and operation of these shelves will be described in more detail below.

FIG. **36** illustrates three divided shelves **104***a* mounted on slot wall **122**. Each divided shelf **104***a* is made up of a shelf base **326** and a shelf tray **328**. The shelf base **326** is mounted onto the slot wall **122** and the shelf tray **328** is mounted onto the shelf base **326**. In the illustrated embodiment, shelf trays **328** are slidably mounted on shelf bases **326**. This permits the shelf trays **328** to be extended forwardly on shelf bases **326**. This facilitates access to the contents being supported on the shelves **104**. After sliding one of the shelf trays **328** forward, the products on the shelf tray **328** can be more easily removed, or restocked. As will be discussed in more detail below, each shelf tray **328** is snap-fittingly attached to a shelf base **326**. Shelf bases **326** are used to support both divided shelf trays **328***a* and undivided shelf trays **328***b*. The shelf bases **326** used to support undivided shelf trays **328***b* are the same as the shelf bases **326** used to support divided shelf trays **328***a*. Thus, a user of display stand **100** can interchange undivided shelf trays and divided shelf trays on a given shelf base **326**. The manner in which these shelf trays can be interchanged will be described more below.

Shelf bases **326** are illustrated in FIGS. **36–43**. Each shelf base **326** includes a front wall **330**, a pair of side walls **332**, and a rear wall **334** (FIGS. **38–39**). Front wall **330**, side walls **332**, and rear wall **334** all extend downwardly from the periphery of a top wall **336**. Shelf trays **328** are supported on the top wall **336**. A lower insert **340** extends rearwardly from rear wall **334** of shelf base **326**. Lower insert **340** is dimensioned to fit within one of the small slots **202** defined in the front face of slot wall **122**. A shelf bracket **388**, which helps support base **326** on slot wall **122**, includes an upper insert **338** having an upper arm **342** and a lower arm **344**. Upper arm **342** is dimensioned to fit within one of the large slots **204** defined in the front face of slot wall **122**. Lower arm **344** is dimensioned to fit into the small slot **202** positioned immediately underneath the large slot **204** into which upper arm **342** is inserted. The insertion of upper arm **342** and lower arm **344** into slot wall **122**, as well as the insertion of lower insert **340** into slot wall **122**, secures the shelf base **326** on slot wall **122**.

In order to remove a shelf base **326** (and any shelf tray positioned thereon), the shelf base **326** has its forward end lifted upwardly. This is illustrated in FIG. **37**. Because of the shapes of small and large slots **202** and **204** in slot wall **122**, as well as the shapes of inserts **338** and **340**, the shelf base need only be lifted upwardly approximately 13° to allow it to be removed from slot wall **122**. This allows a single shelf to be removed from slot wall **122** without having to remove an immediately adjacent shelf positioned thereabove. Thus, shelves may be vertically spaced together more closely than in the past. In prior display stands, the removal of a single shelf typically required a prior removal of all of the shelves positioned above it. This was due to the fact that the shelves had to be pivoted upwardly to a much greater extent. This upward pivoting could only be accomplished if the shelf immediately above the shelf being removed was also removed. Thus, unless the shelf that was desired to be removed happened to be at the very top of the display stand, the shelf could not be removed without removing a number of other shelves that were positioned above the shelf. The present invention, however, overcomes this problem by allowing shelves to be removed with a relatively small amount of upward rotation of the shelf, such as 13°. Other amounts of rotation are also contemplated by the present invention, such as any amounts that are 30° or less.

Each shelf base **326** includes a pair of elongated outer tracks **346** defined in top wall **336** (FIGS. **38–39** and **42**). Outer tracks **336** are spaced apart from each other in a generally parallel orientation and positioned near each side wall **332**. Tracks **346** provide the structure by which a shelf tray **328** may be slidingly attached to shelf base **326**. More particularly, each shelf tray **328** includes a plurality of prongs **348** positioned on the underside of the shelf tray (e.g. FIGS. **46–47**). A horizontal wall **350** is defined at the bottom end of each prong **348**. A cam surface **352** is defined below each horizontal wall **350** and positioned adjacent the horizontal wall **350** (FIG. **47**). In the shelf tray **328** of FIGS. **46** and **47**, there are four prongs **348**. Two of these prongs **348** fit into one of the outer tracks **346** and another two of the prongs **348** fit into the other of the outer tracks **346** defined in shelf base **326**.

The distance D between the ends of horizontal walls **350** (FIG. **47**) is preferably slightly less than the distance between outer tracks **346**. Thus, when a shelf tray **328** is positioned on top of shelf base **326** and pushed downwardly, cam surfaces **352** engage inner edges **354** of tracks **346**. As further downward pressure is applied on shelf tray **328**, the contact of inner edges **354** against angled cam surfaces **352** causes prongs **348** on opposite sides of shelf tray **328** to flex outwardly from each other. This outward flexing continues until horizontal wall **350** has been pushed completely through tracks **346**. Once completely through, each prong **348** snaps back to its unflexed condition. Removal of shelf tray **328** from shelf base **326** is thereafter prevented by horizontal wall **350** contacting the underside of inner side walls **356** that partially define tracks **346** (FIG. **39**). In order to remove shelf tray **328** from shelf base **326**, a user must reach under shelf base **326** and manually flex prongs **348** away from each other such that horizontal walls **350** can be flexed past inner side walls **356**. Once they have been flexed past inner side walls **356**, the entire shelf tray **328** can be lifted out of shelf base **326**.

Shelf base **326** further includes a pair of inner tracks **358** defined in top wall **336** (FIGS. **38–39** and **42**). Inner tracks **358** are oriented generally parallel to each other and are positioned further inwardly from side walls **332** than outer tracks **346**. Inner tracks **358** are also narrower than outer tracks **346**. Inner tracks **358** are used to maintain shelf tray **328** in either its retracted or extended position, as will be described herein. While shelf tray **328** is slidable inwardly and outwardly along shelf base **326**, it is generally desirable to maintain shelf tray **328** in either of two different positions. These two different positions comprise the fully retracted position and the fully extended position. Shelf tray **328** and shelf base **326** are constructed such that shelf tray **328** tends to remain in either one of these conditions. In order to move shelf tray **328** from one of these positions to the other position, or an intermediate position, an additional force must be applied to shelf tray **328** to overcome a retention force that tends to retain the shelf tray **328** in either the extended or retracted position. The manner in which this retention force is created will now be described.

As can be seen in FIGS. **42** and **43**, each inner track **358** is divided into a plurality of segments. These segments include flat sections **360**, sloping sections **362**, and a locking section **364**. The depth of inner tracks **358** in these different sections varies. In flat section **360**, the depth is the greatest and is constant throughout the entire length of sections **360**. In sloping sections **362**, the depth changes. At the junctions

of sloping sections **362** with flat sections **360**, the depth of sloping sections **362** is equal to the depth of flat sections **360**. Moving inwardly from this junction towards locking section **364**, the depth of sloping sections **362** decreases. A pair of locking edges **366** are defined at the junction of sloping sections **362** and locking section **364**. The depth of inner tracks **358** at locking edges **366** is at its shallowest. In locking section **364**, the depth of inner tracks **358** increases beyond that defined at locking edges **366**. As can be seen more clearly in FIG. **43**, a bottom wall **368** defines the depth of each section **360**–**364**. Bottom wall **368** is curved in locking section **364** and angled in sloping sections **362**. The depth of inner tracks **358** in locking section **364** is greatest in the center of locking section **364** due to the curvature of the bottom wall **368** therein.

Each inner track **358** receives a front rounded projection **370** and a rear rounded projection **372** defined on the bottom of shelf trays **328** (FIGS. **46**–**47**). Front rounded projections **370** are defined towards the front of shelf tray **328** while rear rounded projections **372** are defined towards the rear of shelf tray **328**. After a shelf tray **328** has been snapped onto a shelf base **326**, a bottom edge **374** of projections **370** and **372** comes into contact with bottom wall **368** of each inner track **358**. If the shelf tray **328** is in the fully retracted position, the front rounded projections **370** are positioned in locking sections **364** of inner tracks **358**. The rear rounded projections **372** are positioned in the rearward flat sections **360** of tracks **358**. In order to slide shelf tray **328** forwardly with respect to shelf base **326**, the bottom edge **374** of front rounded projections **370** must move past locking edges **366**. If sufficient forward force is exerted on shelf tray **328**, the rounded nature of bottom edge **374** of front rounded projections **370** will cause the locking edges **366** on bottom wall **368** to flex downwardly, thereby allowing front rounded projections **370** to move out of locking section **364**. Thus, in order for shelf tray **328** to be moved out of the fully retracted position, sufficient force must be applied to shelf tray **328** to flex locking edges **366**. Locking edges **366** therefore resist movement of shelf tray **328** out of the fully retracted position.

Once shelf tray **328** has been moved forwardly out of locking sections **364** of inner tracks **358**, shelf tray **328** can be slid forwardly with little resistance. As the shelf tray **328** nears the fully extended position, however, rear rounded projections **372** move into sloping sections **362** of inner tracks **358**. As rear rounded projections **372** move into sloping sections **362**, the bottom edges **374** of projections **372** come into contact with bottom wall **368** in sloping sections **362**. This creates an increasing frictional resistance to moving shelf tray **328** to the fully extended position. However, if sufficient force is applied to shelf tray **328**, rear rounded projections **372** will push against bottom wall **368** in sloping sections **362** with sufficient force to cause bottom wall **368** in sloping section **362** to flex downwardly. This downward flexing of bottom wall **368** in sloping section **362** will allow rear rounded projections **372** to move past locking edges **366**. When rear rounded projections **372** have moved past locking edges **366**, they are then in locking section **364**. In order for rear rounded projections **372** to move out of locking sections **364**, an additional rearward force must be exerted on shelf tray **328** in order to cause locking edges **366** to flex downwardly. Thus, locking edges **366** resist movement of shelf tray **328** out of the fully retracted position after it has been moved into the fully retracted position. Consequently, a user must exert additional force to move shelf tray **328** either into or out of either the fully extended or fully retracted positions. This ensures that, if the shelf tray **328** is moved to the fully retracted position, it will tend to remain there. Similarly, this ensures that if the shelf tray **328** is moved to the fully retracted position, it will stay there.

One of the side walls **332** in each shelf base **326** includes a connector **376** defined therein (FIGS. **38**–**39** and **48**–**49**). Connector **376** functions to ensure that two or more adjacent shelf bases **326** that are hung on slot wall **122** will maintain their horizontal alignment with each other. Because each of the shelf bases **326** are made out of a flexible material, such as a suitable plastic, they may tend to bend downwardly as product is loaded onto their associated shelf trays. If one shelf tray has a heavier amount of product than the shelf tray on an adjacent shelf base, the adjacent shelf **104** may not bend downwardly to as great of an extent as the greater loaded shelf **104**. In such a case, the two shelves will not have their front ends horizontally aligned even though they are both hung at the same horizontal level on slot wall **122**. This creates an undesirable visual effect in that it highlights that the two adjacent shelves are not an integral structure, but rather are two separate structures. Connectors **376** prevent this horizontal misalignment between shelves **104** that are positioned at the same horizontal level on slot wall **122** and next to each other such that their side walls **332** are in contact.

The side wall **332** of each shelf base **326** that does not include connector **374** has a slot **378** defined in it for receiving a connector **376** from an adjacent shelf (FIG. **39**). Thus, if two shelves **104** are to be connected together via connector **376** in order to maintain their horizontal alignment, connector **376** of one of the shelves inserts into the slot **378** of the other shelf. Slot **378** generally has a height that is equal to the thickness of connector **376**. Thus, if an excessive amount of product is positioned on a shelf **104** that causes the shelf **104** to bend downwardly, the insertion of its connector **376** into the slot **378** on the adjacent shelf **104** will ensure that the adjacent shelf **104** bends downwardly an equal amount. The two adjacent shelves will therefore maintain their horizontal alignment. Because each shelf base **326** includes a connector **376** and a slot **378**, it is possible to maintain an entire row of shelves **104** in horizontal alignment. Stated alternatively, as many shelves **104** as may be desired can be connected together via connectors **376** in slots **378** to ensure their horizontal alignment with each other.

In certain situations, it is desirable to not have connector **376** sticking out from one of the side walls **332** of shelf base **326**. Such situations may arise where the side wall **332** of shelf base **326** that has connector **376** on it is positioned next to a non-shelf structure, such as an end panel **102**, a cabinet **106**, a divider panel **114**, or some other non-shelf structure. In order to allow shelf base **326** to be positioned right next to such a non-shelf structure, connector **376** is constructed such that it can flex inwardly into shelf base **326**. Connector **376** is defined on a flexible tab **380** on side wall **332** (FIGS. **38**–**39** and **48**). Flexible tab **380** is defined by an elongated, curved cut **382** in side wall **332**. Flexible tab **380** can be pushed inwardly into shelf base **326** sufficiently far such that the outermost extent of connector **376** is flush with the plane defined by side wall **332**. In other words, connector **376** can be pushed inwardly into shelf base **326** so that it does not stick out from side wall **332**. Because it does not stick out from side wall **332**, this side of the shelf base **326** can be positioned tightly against a non-shelving structure.

In order to maintain connector **376** in the retracted position, a locking tab **384** is provided on shelf base **326** (FIG. **41**). Locking tab **384** includes a lower surface **386** that is positioned slightly lower than the upper surface of flexible

tab **380**. Thus, in order to push flexible tab **380** inwardly, flexible tab **380** must flex downwardly to some extent and/or the lower surface **386** of locking tab **384** must flex upwardly a small amount. Once flexible tab **380** has been pushed past locking tab **384**, it does not easily return to its unflexed position because locking tab prevents it from so returning. This is because locking tab **384** has an angled surface that engages flexible tab **380** when flexible tab **380** is being pushed inwardly, but has a generally vertical surface which engages flexible tab **380** when flexible tab **380** is pushed outwardly. Thus, flexible tab **380** cannot be easily pushed outward past locking tab **384**. Flexible tab **380** therefore remains retracted into shelf base **326** after it has been pushed past locking tab **384**. Only if a user manually flexes tab **380** and/or locking tab **384** can flexible tab **380** be returned to its un-flexed state in which connector **376** projects outwardly from side wall **332**.

As was previously mentioned above, each shelf base **326** is supported on slot wall **122** by a pair of shelf brackets **388** (FIGS. **48**–**53**). Each shelf bracket **388** includes the upper insert **338** that includes upper arm **342** and lower arm **344**. As was mentioned previously, upper arm **342** fits into a large slot **204** in slot wall **122** and lower arm **344** fits into a small slot **202** in slot wall **122**. Shelf brackets **388** are attached to shelf base **326** in recessed areas **390** (FIGS. **39** and **52**–**53**). Shelf brackets **388** allow the attached shelf base **326** to be supported on slot wall **122** in two different orientations. In a first orientation, shelf base **326** is supported on slot wall **122** in a generally horizontal orientation. In this orientation, both shelf base **326** and the supported shelf tray **328** are positioned horizontally. In a second orientation, shelf brackets **388** can support shelf base **326** such that the front of shelf base **326** angles downwardly approximately 10°. When shelf base **326** is supported in this manner, the supported shelf tray **328** has a slight downward slant to it, which allows the customer to view more of the product positioned on the shelf tray **328**. Shelf brackets **388** allow the user to easily switch between supporting shelf bases **326** in the horizontal orientation and the downwardly slanted orientation, or vice versa.

Each shelf bracket **388** includes three teeth **392***a, b*, and *c*. Teeth **392** are used to support shelf base **326** in either the horizontal or downwardly slanted orientations. This is illustrated more clearly in FIGS. **52** and **53**. Each shelf base **326** includes a rear flange **394** and a front flange **396** that extend downwardly in recessed area **390**. Front and rear flanges **396** and **394** are dimensioned to fit between teeth **392**. In FIG. **52**, shelf bracket **388** is attached to shelf base **326** in the manner that supports shelf bracket **388** in the horizontal orientation. Rear flange **394** is positioned behind tooth **392***c* and front flange **396** is positioned between teeth **392***b* and **392***c*. The interaction of teeth **392** with front and rear flanges **396** and **394** securely holds shelf base **326** on shelf brackets **388**.

If it is desired to support the shelf base **326** in the downwardly slanted orientation, shelf base **326** is lifted by grasping one or both of tabs **900** and then repositioned to the configuration shown in FIG. **53**. In this configuration, rear flange **394** is positioned between teeth **392***b* and **392***c*. Front flange **396** is positioned between teeth **392***a* and **392***b*. This causes shelf base **326** to slope downwardly when supported on slot wall **122**. Again, the interaction of flanges **394** and **396** with teeth **392** securely maintained shelf base **326** on shelf bracket **388** in this orientation. In order to change a shelf base **326** from one orientation to the other, the shelf base **326** is merely lifted vertically upward until the flanges **394** and **396** separate from the spaces between teeth **392**. Thereafter, the shelf base **326** is rotated to the desired orientation and flanges **394** and **396** are moved downwardly into the appropriate interlocking arrangement with teeth **392**.

In order to conceal the underside of shelf base **326** from view, a shelf bottom panel **398** may be provided (FIG. **44**). Bottom panel **398** includes a front end **400**, a back end **402**, a pair of slots **404**, two large apertures **406**, one small aperture **408**, and four side tabs **410**. Side tabs **410** are used to secure bottom panel **398** to shelf base **326**. Each side tab **410** may be inserted into one of the four side slots **412** defined in side walls **332** of shelf base **326** (FIGS. **38**–**40** and **43**). Bottom panel **398** is preferably made from a flexible material, such as plastic, and can be suitably flexed to allow itself to be pushed up under shelf base **326**. In this flexed position, the side tabs **410** are aligned with side slots **412**. By allowing bottom panel **398** to return to its unflexed position while so aligned, side tabs **410** will be inserted into side slots **412**. Thereafter, bottom panel **398** will be maintained on shelf base **326**. Its removal can only be affected by flexing bottom panel **398** sufficiently to allow side tabs **410** to exit out of side slots **412**.

When bottom panel **398** is attached to shelf base **326**, it preferably does not conceal the entire bottom portion of shelf base **326**. In other words, the distance from front end **400** to back end **402** of bottom panel **398** is preferably less than the distance from front wall **330** to rear wall **334** of shelf base **326**. When bottom panel **398** is attached to shelf base **326**, the back end **402** of panel **398** contacts rear wall **334** of shelf base **326**. The front end **400** of bottom panel **398**, however, terminates a short distance away from front wall **330** of shelf base **326**. This leaves space for access to a pair of side screw bosses **314** defined on the bottom side of shelf base **326** (FIGS. **39** and **43**). Side screw bosses **414** may be used to support one or more shelf lights, as will be described in more detail below. The termination of bottom panel **398** prior to screw bosses **414** thus leave sufficient clearance for accessing the screw bosses if needed. Similarly, slots **404** leave clearance for the sliding movement of shelf tray **328** in outer tracks **346** of shelf base **326**. Small aperture **408** provides a hole for a center projection **416** defined on the underside of shelf base **326** to be inserted into. Projection **416** and small aperture **408** are dimensioned to create a frictional fit with each other that helps keep panel **398** flat when attached to shelf base **326**. Large apertures **406** function to create finger holes by which panel **398** may be grasped for removing it from base **326**. Large apertures **406** may also be utilized to remove a shelf tray **328** from base **326** without first removing panel **398**.

FIGS. **48** and **49** illustrate a divided shelf **104***a* attached to shelf base **326**. The divided shelf tray **328***a* is illustrated in more detail in FIGS. **36**–**37** and **45**–**47**. Each divided shelf tray **328** includes a plurality of elongated, parallel shelf dividers **418**. Dividers **418** extend forwardly and rearwardly in shelf tray **328***a*. Each divider **418** may be spaced apart from an adjacent divider a distance equal to the width of a typical pack of cigarettes, if display stand **100** is being used to display cigarettes. If display stand **100** is being used to display different types of products, dividers **418** would preferably be constructed such that they were spaced apart a distance equal to the standard width of the products being displayed.

A paddle may be positioned within each space defined between dividers **418** (FIGS. **48**–**49**). Each paddle **420** is coupled to a coiled spring **422**. Paddles **420** and springs **422** are optional features that may or may not be included with divided shelf tray **328***a*. Paddles **420** and coiled springs **422** are slidable within a track **424** defined in the spaces between

dividers **418**. Paddles **420** and coiled springs **422** serve to ensure that products positioned on shelf tray **328***a* are pushed forwardly to the front end of divided shelf tray **328***a*. Thus, if cigarette packs are stored on shelf tray **328***a*, they would be positioned in front of paddle **420**, and paddle **420** and coiled spring **422** would ensure that they would always be pushed up against a front wall **426** of shelf tray **328***a* regardless of any removal of products thereafter by customers. The detailed construction of paddles **420**, coiled springs **422** and tracks **424** is described more fully in U.S. Pat. No. 6,193,085 issued to Nook et al., entitled DISPENSING RACK, the disclosure of which is hereby incorporated herein by reference.

Front wall **426** of shelf tray **328***a* further includes an upturned hook **428** defined on the front side of front wall **426**. Hook **428** may be used to secure a sign holder **430** to the front end of tray **328***a* (FIGS. **36**–**37** and **52**–**53**). As illustrated more clearly in FIGS. **52** and **53**, sign holder **430** includes an upper front channel **432** and a lower front channel **434**. Upper and lower front channels **342** and **434** may receive a sign on which advertising, or other information, may be printed. The sign may be made out of any suitable material, such as paper, cardboard, or other materials. The sign may either be slid into upper and lower channels **432** and **434** from a side of sign holder **430**, or, if the sign material is flexible, it can be flexed into channels **432** and **434** from the front of sign holder **430**.

Sign holder **430** includes a rear downward hook **436** defined behind upper front channel **432**. Rear hook **436** hooks onto hook **428** on front wall **426**. Sign holder **430** further includes a bottom wall **438** having a rear tab **440**. Bottom wall **448** is spaced sufficiently far from rear hook **436** such that it is level with a bottom edge **442** of front wall **426**. Rear tab **440**, however, curves upwardly such that it must be flexed downwardly before it can be moved past bottom edge **442** of front wall **426**. In order to attach sign holder **430**, which is made out of a flexible material such as plastic, rear hook **436** is first attached onto hook **428**. A user then grasps rear tab **440** and forces it to flex downwardly such that it can be moved past bottom edge **442** of front wall **426**. Thereafter, the user releases rear tab **440** and it returns upward to its unflexed position. In this unflexed position, which is illustrated in FIGS. **52** and **53**, rear tab **440** prevents sign holder **430** from being removed from front wall **426**. If a user desires to remove a sign holder **430**, he or she simply pushes rear tab downwardly sufficiently far to allow it to move past bottom edge **442**. Rear hook **436** is then unhooked from hook **428**.

Undivided shelf tray **328***b* is depicted in more detail in FIGS. **54**–**56**. Undivided shelf tray **328***b* may be attached to shelf base **326** in the same manner previously described above with respect to divided shelf tray **328***a*. Undivided shelf tray **328***b* may therefore slide forwardly or rearwardly on shelf base **326**. Undivided shelf tray **328***b* differs primarily from divided shelf tray **328***a* in that it includes a flat wall **444** on which products may be supported. There are no dividers **418** which interrupt or divide flat wall **444**. If display stand **100** is used to display cigarettes, undivided shelf tray **328***b* is advantageously suited to supporting cartons of cigarettes. However, cigarette packs, or any other types of products may be displayed on undivided shelf tray **328***b*.

Undivided shelf tray **328***b* includes a number of the same structures that are present in divided shelf tray **328***a*. These include four prongs **348** which are constructed in the same manner as the prongs **348** on divided shelf tray **328***a*. Undivided shelf tray **328***b* also includes a pair of front rounded projections **370** and rear rounded projections **372**, which are the same as the projections **370** and **372** on divided shelf tray **328***a*, and operate in the same manner. Still further, a front wall **426** having a hook **428** is provided on the front of undivided shelf tray **328***b*. Front wall **426** and hook **428** of undivided shelf tray **328***b* may have a sign holder **430** (FIG. **56**) attached thereto in the same manner that has been described previously.

A waterfall shelf **104***c* is depicted in more detail in FIGS. **57**–**58**. Waterfall shelf **104***c*, unlike shelves **104***a* and **104***b*, is not supported on a shelf base **326**. Rather, waterfall shelf **104***c* is attached directly to slot wall **122**. Waterfall shelf **104***c* is attached to slot wall **122** by way of an upper insert **446** and a lower insert **448**. Upper insert **446** includes an upper arm **450** and a lower arm **452**. Lower insert **448** fits into one of the smaller slots **202** defined in slot wall **122** in the same way that lower insert **340** on shelf base **326** fits into one of the small slots **202**. Similarly, upper arm **450** fits into one of the large slots **204** in slot wall **122** in the same manner that one of the upper arms **342** on shelf bracket **388** fits into a large slot **204**. Still further, lower arm **452** fits into one of the small slots **202** in slot wall **122** in the same manner that the lower arms **344** on shelf brackets **388** fit into small slots **202**.

Waterfall shelf **104***c* may or may not include a plurality of dividers **418**. In the embodiment illustrated in FIG. **57**, there are four dividers **418**. These dividers **418** function in the same manner as the dividers **418** in divided shelf tray **328***a*. Waterfall shelf **104***c* further includes a front wall **426** having a hook **428**. Front wall **426** and hook **428** may be used to support a sign holder **430** in the manner that has been previously described. Waterfall shelf **104***c* also includes a connector **376** mounted on a flexible tab **380**. Connector **376** may be used to ensure that two or more waterfall shelves **104***c* that are positioned in a side-to-side manner maintain their horizontal alignment, in the same manner that connector **376** does for maintaining the alignment of shelf bases **326**. While not illustrated in FIGS. **57** and **58**, each waterfall shelf **104***c* includes a slot **378** on its side wall opposite connector **376** for receiving the connector **376** from an adjacent shelf.

In the embodiment of display stand **100** depicted in FIG. **1**, there are a pair of divider panels **114** mounted on back wall **118**. Divider panels **114** are specifically mounted onto slot wall **122**. They therefore may be positioned at any side-to-side location on slot wall **122**. Divider panels **114** are mounted on slot wall **122** by way of a plurality of divider panel brackets **454**, which are illustrated in more detail in FIGS. **59**–**61**. Each divider panel bracket **454** includes a pair of side walls **456** which are spaced apart from each other a distance that is slightly greater than the thickness of divider panels **114**. Divider panel **114** can thus be inserted between side walls **456**. A back wall **458** connects side walls **456** together. Back wall **458** has an attachment plate **460** secured thereto. Attachment plate **460** includes an upper flange **462** and a lower flange **464**. Upper flange **462** is dimensioned to be inserted into one of the large slots **204** defined in slot wall **122**. Lower flange **464** is dimensioned to be inserted into one of the small slots **202** defined in slot wall **122**. Brackets **454** can thus be hung on slot wall **122**.

In order to support a divider panel **114** on slot wall **122**, a plurality of divider panel brackets **454** are attached to slot wall **122** in vertical alignment at the desired location for supporting divider panel **114**. Each divider panel bracket **454** includes a pin **466** that extends between side walls **456** (FIG. **61**). Pin **466** fits into one of the slots **468** defined along the back edge **470** of divider panel **114** (FIG. **62**). As shown

in FIG. **62**, divider panel **114** includes 6 such slots **468**. Divider panel **114** may include more or less than this number, depending upon the height of display stand **100**. In order to support divider panel **114** on brackets **454**, at least two brackets **454** are attached to slot wall **122**. Then, divider panel **114** is inserted between the side walls **456** of each bracket **454**. The insertion of divider panels **114** between side walls **456** is carried out such that the pins **466** in each bracket **454** will fit into one of the slots **468** in divider panel **114**. As can be seen more clearly in FIG. **62**, each slot **468** includes a horizontal section and a vertical section. Divider panel **114** is pushed into brackets **454** between side walls **456** sufficiently far such that pins **466** travel all the way to the end of the horizontal section of slots **468**. Thereafter, panel **114** is pushed downwardly such that pins **466** will move upwardly into the vertical section of slots **468**. Thereafter, the force of gravity will ensure that pins **466** remain in the vertical part of slots **468**. This ensures that panel **114** is securely mounted to brackets **454**, which are in turn securely mounted to slot wall **122**. In order to remove panel **114** from brackets **454**, it is lifted upward sufficiently far that pins **466** are moved to the bottom of the vertical sections of slots **468**. When in this position, divider panel **114** can be pulled forwardly and the pins **466** will exit out of the horizontal portion of slots **468**. The divider panel brackets **454** can then be removed from slot wall **122** if desired.

As was mentioned previously, the embodiment of display stand **100** depicted in FIG. **1** includes one cabinet **106**. Cabinet **106** is mounted to slot wall **122**. Thus, the position of cabinet **106** in a given display stand **100** can be changed. Alternatively, additional cabinets **106** may be mounted to slot wall **122**, or no cabinets at all may be mounted in a given configuration of display stand **100**. Cabinet **106** includes a top wall **472**, a bottom wall **474**, a pair of side walls **476**, and two doors **478** (FIG. **1**). Cabinet **106** is mounted to slot wall **122** by way of the side walls **476**. The detailed construction of side wall **476** is illustrated in FIG. **63**. Side wall **476** includes a top end **480**, a bottom end **482**, a front end **484**, and a back end **486**. An attachment plate **488** extends outwardly from the back end **486** at generally a right angle to the main body of side wall **476**. Attachment plate **488** extends outwardly from back end **486** adjacent the top end **480** of side wall **476**. Attachment plate **488** includes a horizontal slot **490** defined therein. Horizontal slot **490** receives a hook **492** from a cabinet bracket **494**, which is used to support side walls **476**, and thus cabinet **106**, on slot wall **122**. Cabinet bracket **494** is illustrated in more detail in FIGS. **64** and **65**.

Each cabinet bracket **494** includes an upper flange **496** and a lower flange **498**. Upper flange **496** is shaped and dimensioned to be received within one of the large slots **204** defined in slot wall **122**. Lower flange **498** is dimensioned and shaped to be received in one of the small slots **202** defined in slot wall **122**. Thus, cabinet bracket **494** can be attached to slot wall **122** by inserting upper flange **496** into a selected large slot **204** and then inserting lower flange **498** into the aligned small slot **202**. Cabinet bracket **494** is attached to slot wall **122** at any desired location for supporting cabinet **106**. As mentioned, hook **492** of bracket **494** fits into horizontal slot **490** in attachment plate **488** of side wall **476**. Each side wall **476** thus hangs on a hook **492** on a bracket **494**. The force of gravity and the weight of cabinet **106** maintains side walls **476** on hooks **492** of brackets **494**. In order to remove side walls **476** from brackets **494**, the side walls **476** would have to be lifted sufficiently far to allow horizontal slots **490** to become unhooked from hooks **492**.

A top flange **500** is defined along the top end **480** of side wall **476** (FIG. **63**). Top flange **500** includes a plurality of fastener apertures **502**. Top flange **500** is oriented generally at right angles with respect to the main body of side wall **476**. Top flange **500** provides a support for one end of the top wall **472** of cabinet **106**. In order to secure top wall **472** to side wall **476**, fasteners are inserted through fastener apertures **502** and into top wall **472**. These fasteners may be screws, rivets, or any other suitable fastener for securing side wall **476** to top wall **472**. A plurality of lower fastener apertures **504** are also defined in side wall **476** near the bottom end **482**. Lower fastener apertures **504** are used to secure bottom wall **474** to side walls **476**. Screws, or other suitable fasteners, are inserted through lower fastener apertures **504** and into one end of bottom wall **474**. Bottom wall **474**, top wall **472**, and doors **478** may be affixed to the two side walls **476** prior to mounting cabinet **106** on cabinet brackets **494**. In order to ensure that cabinet brackets **494** and attachment plates **488** do not interfere with the attachment of surrounding items, side walls **476** may be constructed such that their attachment plates **488** face inwardly towards each other. Thus, each side wall **476** would be a mirror image of the other side wall and access to the attachment plates **488** when cabinet **106** was mounted on slot wall **122** could only be achieved by opening doors **478**.

A pivot pin **506** is attached to each side wall **476** adjacent the lower front corner of side wall **476** where bottom end **482** and front end **484** meet (FIG. **63**). Pivot pin **506** provides a pivot axis about which one of the doors **478** may pivot between an open and closed position. Another pivot pin (not shown) is provided on the bottom of top wall **472** in vertical alignment with pivot pin **506**. These two pivot pins insert into corresponding cylindrical recesses defined in the door **478** and thereby allow the door **478** to pivot between an open and closed position. If desired, doors **478** may include a lock which only allows them to be opened when the lock has been unlocked. Items may thus be securely stored in cabinet **106**.

While not illustrated in the embodiment of display stand **100** depicted in FIG. **1**, in some instances it may be desirable to include a basket **508** in display stand **100** (FIG. **66**–**67**). Basket **508** includes a pair of attachment brackets **510** positioned along a back wall **512** of basket **508**. Attachment brackets **510** each include an upper flange **514** and a lower flanges **16**. Upper flanges **514** are shaped and dimensioned to be inserted into large slots **204** on slot wall **122**. Lower flanges **516** are shaped and dimensioned to be inserted into small slots **202** on slot wall **122**. Flanges **514** and **516** on attachment brackets **510** thereby enable basket **508** to be hung on slot wall **122**. Basket **508** further includes a pair of side walls **518** and a bottom wall **520**. Bottom wall **520** provides a structure on which items for display in stand **100** may be positioned and supported. Basket **508** may be used to support items on display stand **100** that may be too large to be supported on shelves **104**, or which are otherwise more desirably positioned in basket **508** than on any of the shelves **104**. The front wall on basket **508** may include a hook **492** which can be used to optionally mount a sign holder **430** in the manner previously described.

In addition to basket **508**, a utility pole **522** may optionally be mounted to slot wall **122** (FIGS. **68**–**71**). Utility pole **522** allows a variety of different items to be selectively attached thereto. These items may include a literature holder **524**, a light box **526**, and/or a gravity fed product dispenser **112** (FIGS. **68** and **72**). As illustrated in FIG. **68**, utility pole **522** can support multiple ones of these items. Thus, a variety of different items and configurations of items may be utilized

in conjunction with utility pole **522**. Multiple utility poles **522** can be mounted onto a given display stand **100**, if desired.

Utility pole **522** is supported on slot wall **122** by way of one or more utility pole brackets **530**. Each utility pole bracket includes an outer sleeve **532** and an inner bar **534** that fits within outer sleeve **532**. Inner bar **534** can be slid within outer sleeve **532**, thus allowing the length of utility pole brackets **530** to be adjusted. Outer sleeve **532** includes a plurality of locking holes **536** (FIGS. **68** and **70**). Locking holes **536** are adapted to receive a flexible plug defined on inner bar **534**. Once the flexible plug is received in one of holes **536**, sleeve **532** is locked into a given position with respect to bar **534**. To extend bar **534** with respect to sleeve **532**, the flexible plug is merely pushed inwardly such that it does not extend into any of the holes **536**. Sleeve **532** is then slid to a new position on bar **536** until the plug snaps back into one of the holes **536**. This allows the length of brackets **530** to be changed. Alternatively, holes **536** could be threaded and adapted to receive a thumb screw, or other threaded fastener. When one or more thumb screws are inserted into locking holes **536**, the thumb screws come into contact with inner bar **534**. By appropriately tightening the thumb screws, inner bar **534** can be locked into a given position inside of outer sleeve **532**. Thus, the length of utility pole bracket **530** could be chosen and then locked at that length by way of the thumb screws in locking holes **536**.

Each utility pole bracket **530** further includes an attachment plate **538** that has an upper flange **540** and a lower flange **542**. Upper flange **540** is shaped and dimensioned to be inserted into one of the large slots **204** on the front of slot wall **122**. Lower flange **542** is shaped and dimensioned to be received within one of the small slots **202** defined on the front of slot wall **122**. Upper and lower flanges **540** and **542** thereby allow utility pole bracket **530** to be releasably mounted to slot wall **122**. As noted above, the number of utility pole brackets **530** that may desirably be used to support a utility pole **522** will depend upon the length of utility pole **522**. For relatively short utility poles **522**, only a single utility pole bracket **530** may be necessary. For relatively long utility poles **522**, more than two utility pole brackets **530** may be desirably used to support utility pole **522**. Utility pole **522** may be constructed in different lengths to allow users of display stand **100** to have more options in configuring the look of display stand **100**.

Utility pole **522** includes a rear channel **544**, a front channel **546**, and a pair of side channels **548** (FIGS. **68**–**69** and **74**). Each of these four channels are used to mount items to utility pole **522**. For example, utility pole brackets **530** are attached to utility pole **522** via rear channel **544**. The light box **526** depicted in FIG. **68** is attached to utility pole **522** via one of the side channels **548**. The literature holder **524** in FIG. **68** is attached to the front channel **546** of utility pole **522**. Regardless of which channel an item is attached to on utility pole **522**, the method of attaching the item is generally the same. In general, a plate is inserted into one of the channels on utility pole **522**. The plate includes one or more threaded screw holes. Because the plate has a width wider than the narrower portion of these channels, the tightening of screws in these threaded screw apertures eventually causes the plate to grip the underside of the channel walls. This secures the item to utility pole **522**. A more detailed description of this method of attachment is described below with respect to literature holder **524**.

Literature holder **524** is attached to utility pole **522** via a literature holder bracket **550** (FIG. **71**). Literature holder bracket **550** includes a front plate **552**, a center wall **554**, and an elongated attachment plate **556**. Front plate **552** includes two attachment holes **558** which are used to secure bracket **550** to literature holder **524**. Attachment holes **558** align with a pair of attachment holes **560** defined in the back wall of literature holder **524** (FIG. **68**). Screw, rivets, or other fasters can be inserted through each of the attachment holes **558** and **560** to thereby secure literature holder bracket **550** to literature holder **524**.

Each channel **544**–**548** in utility pole **522** is defined by a pair of side walls **562** and horizontal end walls **564** (FIGS. **69** and **74**). The distance between side walls **562** is greater than the distance between the innermost ends of horizontal end walls **564**. The attachment plate **556** on literature holder bracket **550** has a width W (FIG. **71**) that is smaller than the distance between side walls **562**, yet larger than the distance between horizontal end walls **564**. In order to insert attachment plate **556** into one of the channels **544**–**548**, the attachment plate **556** is slid into the desired channel from either the top end or the bottom end of utility pole **522**. Because attachment plate **556** has a width W that is greater than the distance between horizontal end walls **564**, it cannot be removed from the channel other than by sliding it out of the top end or the bottom end of utility pole **522**.

In order to secure attachment plate **556** at a given location in the selected channel, screws are inserted through a pair of screw holes **566** defined in attachment plate **556** (FIG. **71**). Screw holes **566** are threaded holes that extend completely through attachment plate **556**. When a screw is inserted into screw hole **556** and rotated, eventually the end of the screw shaft will come into contact with an inner wall **568** on utility pole **522** that defines the bottom of the utility pole channel. As the screw is further tightened, the screw will push attachment plate **556** away from inner wall **568**. Eventually, the rotation of the screw will cause attachment plate **556** to come into contact with horizontal end walls **564**. By sufficiently tightening the screws and screw holes **566**, the frictional contact between attachment plate **556** and horizontal end walls **564** can be increased such that attachment plate **556** no longer can slide in the utility pole channel. In this manner, literature holder bracket **550** can be secured at a desired height on utility pole **522**. As mentioned, literature holder bracket **550** can be secured in any of the channels **544**–**548** of utility pole **522**.

Inner bar **534** of utility pole bracket **530** includes an attachment plate **570** that is the same as attachment plate **556** in literature holder bracket **550** (FIG. **69**). Specifically, attachment plate **570** includes at least two screw holes into which screws may be inserted. The tightening of these screws forces the attachment plate **570** against the horizontal end walls **564** in the utility pole channel in which attachment plate **570** has been inserted. Tightening of the screws maintains the attachment plate **570** at the desired height along the utility pole **522**.

Light box **526** is attached to utility pole **522** in the same manner. Specifically, light box **526** also includes a bracket **572** having an attachment plate **574** attached thereto (FIG. **69**). Attachment plate **574** includes a plurality of threaded screw holes which are adapted to receive screws that can be tightened to secure bracket **572** to utility pole **522**. Bracket **572** is attached at its other end to a light box support **576**. Light box support **576** may be secured to bracket **572** by way of a plurality of screws **578**, or other fasteners. Light box support **576** includes two ends **580** having apertures through which a pair of pivot screws **582** are inserted. Pivot screws **582** define a pivot axis about which light box **526** may be pivoted. Light box **526** includes a front panel **584** on which advertising, or other printed material may be displayed. The

front panel **584** is preferably made from a material that is at least partially translucent. One or more cold cathode, fluorescent, or other types of lights may be contained within light box **526** to illuminate the advertising, or other printed material, displayed on front panel **584**. Light box **526** could alternatively be mounted directly to slot wall **122**, rather than utility pole **522**, by the use of appropriate brackets. Such brackets would attach to support **576** at one end, and have an upper and lower flange at the other end that could be inserted into slots **202** and **204** in slot wall **122**.

As mentioned above, a gravity fed product dispenser **112** may also be attached to utility pole **522**. Gravity fed product dispenser **112** is illustrated in more detail in FIGS. **72**–**74**. Gravity fed dispenser **112** is attached to utility pole **522** by way of a dispenser bracket **586** (FIGS. **74**–**75**). Dispenser bracket **586** includes an attachment plate **588** having a pair of screw holes **590**. Attachment plate **586** and screw holes **590** operate in the same manner as attachment plate **556** and screw holes **566** of literature holder bracket **550**. Attachment plate **588** can thus be inserted into any one of the channels **544**–**548** in utility pole **522** and secured therein by way of the tightening of screws in screw holes **590**. Dispenser bracket **586** further includes a pair of support arms **592**. Support arms **592** support the body of product dispenser **112**.

Product dispenser **112** is comprised of a plurality of vertical channels **594** that are each defined by a back wall **596** and a pair of side walls **598**. Each vertical channel **594** is adapted to receive and hold a vertical stack of products. The product dispenser **112** depicted in FIGS. **72**–**74** is specifically designed for holding packs of cigarettes. Each side wall **598** includes a front wall **600** at the front end of the vertical channels **594**. Front walls **600** are bent inwardly sufficiently far to prevent product from being moved into and out of channels **594** through the space defined between two adjacent front walls **600**. In order to fill a channel **594** with product, the product is dropped into the channel **594** from above. A customer can remove a product from channel **594** by grasping the bottom most one of the products in a given stack within channel **594** and pulling it forwardly. Forward movement of the product is not prevented in this bottom area because front walls **600** terminate above this bottom area. After a consumer has removed a desired number of products, the remaining products fall down to the bottom of the channel **594**. The force of gravity thus ensures that a product will always be positioned adjacent the bottom area of the vertical channel **594** whenever there are products in channel **594**.

The side walls **598** and back wall **596** that define each channel **594** are supported on support arms **592** by way of a pair of hooks **602** (FIGS. **73**–**74**). Each hook **602** fits over one of the support arms **592**. The hook **602** may be partially flexible such that they must be flexed before sufficient clearance is provided for support arms **592**. In this manner, hooks **602** provide a certain amount of resistance to simply lifting dispenser **112** off of support arms **592**. In order to remove dispenser **112** from support arms **592**, the hook **602** must be partially flexed to allow sufficient clearance for support arms **592** to move out of hook **602**. Bracket **586** may be constructed such that support arms **592** have different lengths than that depicted in FIG. **73** and **74**. If support arms **592** are constructed to be longer than that depicted in these drawings, additional vertical channels **594** defined by a pair of side walls **598** and a back wall **596** can be attached to support arms **592**. If support arms **592** are constructed to be shorter than that illustrated, one or more of the vertical channels **594** can be removed. The user of display stand **100** thus has the option of implementing a gravity dispenser **112** of different sizes on the display stand **100**.

In some instances it may be desirable to provide more lighting to display stand **100** than that provided by the lights held up by light brackets **116**. As has been described, light brackets **116** are positioned near the top of display stand **100**. The light from the lights in these brackets therefore may not illuminate all of the products on display stand **100**, particularly those products positioned near the bottom of display stand **100**. In order to provide additional lighting for the products on display stand **100**, one or more shelf lights may be added to display stand **100**. These shelf lights are attached to display stand **100** by way of a shelf light support **604** that attaches to the underside of a shelf base **326**. One of such shelf light supports **604** is depicted in FIGS. **76** and **77**. Shelf light support **604** includes a top wall **606** and a pair of arms **608**. A cylindrical recess **610** is defined in shelf light support **604** near the intersection of arms **608** with top wall **606**. Cylindrical recess **610** provides a space for securing a cold cathode light, a fluorescent light bulb, or another suitable type of light to shelf light support **604**. One or more fixtures (not shown) may be attached between arms **608** in order to fully secure the light bulb in cylindrical recess **610**.

Top wall **606** includes a plurality of fastener apertures **612** which are used to secure shelf light support **604** to the underside of a shelf base **326**. Specifically, a screw may be inserted into the two outer most fastener apertures **612** in support **604** and into each of the side screw bosses **414** defined in shelf base **326**. The screws, or other fasteners, inserted through apertures **612** into bosses **414** thereby secure shelf light support **604** to the underside of shelf base **326**. Shelf light support **604** may be secured to the underside of shelf base **326** such that wall **606** extends rearwardly from arms **608**. Arms **608** thus conceal the light bulb or light source from direct viewing by the customers. The light from the bulb or source shines generally downwardly and illuminates the products disposed underneath shelf light support **604**. Caps may be provided at either end of shelf light support **604** to further conceal from view the light bulb or source and its associated structures.

While not illustrated in the embodiment of display stand **100** depicted in FIG. **1**, a pair of security doors **614** may be added to display stand **100**. Security doors **614** are depicted in more detail in FIG. **79**. Security doors **614** are positioned in front of the entire display stand **100** and prevent access to any of the products on display stand **100** without opening one or more of the security doors **614**. Security doors **614** are housed within a frame **616** that is made up of two side members **618**, a bottom member **620**, and a top member **622**. Each side member **618** includes a plurality of fastener apertures **624** which receive suitable fasteners for attaching side members **618** to one of the end panels **102**. Such fasteners may be screws, rivets, or any other suitable fastener. Side members **618** are thus spaced apart a distance equal to the horizontal separation between end panels **102**.

Top member **622** is secured to the underside of horizontal light bars **220**. As illustrated more clearly in FIG. **24**, light bar **220** includes a bottom channel **626** that is defined by two side walls **628**, two horizontal front walls **630**, and a back wall **632**. Top member **622** is secured in bottom channel **626** by way of a suitable number of tap plates **266**. More specifically, top member **622** includes a plurality of upper fastener apertures **634** which are unthreaded and which receive screws, each of which is inserted into a single tap plate **266**. The tap plates **266** used to secure top member **622** in bottom channel **626** have a width W that is less than the distance between the inner edges of front wall **630**. These tap

plates **266** also have a length L that is greater than the distance between the inner edges of front wall **630**, but less than the distance between side wall **628**. Thus, the tap plates **266** can be inserted into bottom channel **626** when their length dimension is oriented parallel to the longitudinal extent of bottom channel **626**. Once a screw is inserted into the aperture in tap plate **266** and the screw is initially rotated, tap plate **266** will rotate 90° until its square corners **278** contact side walls **628**. Thereafter, further rotation of the screws will not cause any further rotation of the tap plate **266**. As the screws are rotated more and more, the front walls **630** of channel **626** become more and more sandwiched between tap plates **266** and the upper wall of top member **622** in which upper fastener apertures **634** are defined. By sufficient tightening of the screws, top member **622** can be secured to bottom channel **626** in light bar **220**.

As illustrated in FIG. **80**, top member **622** includes a plurality of cut outs **636**. Cut outs **636** provide clearance for light brackets **116**. Top member **622** further includes two side fastener apertures **638** which receive a suitable fastener used to secure top member **622** to each side member **618**. A pivot hole **640** is also defined in top member **622**. Pivot hole **640** provides a place for inserting a pivot pin attached to one of the doors **614** to thereby allow the doors to pivot open about a vertical axis.

Bottom member **620** of frame **616** is illustrated in more detail in FIG. **81**. Bottom member **620** includes a pair of pivot pins **642** that are vertically aligned with the pivot holes **640** defined in top member **622**. Pivot pins **642** insert into the security door **614** and define the vertical pivot axis about which security doors **614** may rotate. Bottom member **620** further includes a pair of side fastener apertures **644** which receive suitable fasteners for attaching bottom member **620** to each side member **618**. Bottom member **620** further includes a bottom flange **646** in which a plurality of attachment apertures **648** are defined. Attachment apertures **648** are used to secure the bottom member **620** to front rail **148** of base **120**. As illustrated in FIGS. **12** and **13**, front rail **148** includes a plurality of fastener apertures **650** which are aligned with the attachment apertures **648** on bottom member **620**. Screws, or other appropriate fasteners, can thus be inserted through attachment apertures **648** and into fastener apertures **650** to thereby secure bottom member **620** to front rail **148**.

The security doors **614** may include locks which allow them to be selectively locked. These security doors **614** may also be constructed to have different heights and widths to allow them to be attached to display stand **100** having different sizes. When security doors **614** are attached to the front of display stand and lock, access to the products in display stand **100** is prevented with the exception of the openings defined by, and surrounded by, light brackets **116**, light bar **220**, and back wall **118**. These openings are confined to the top portion of display stand **100** and normally cannot be accessed without some kind of vertical assistance. There is therefore very limited access to the contents of display stand **100** in this situation. If it is desired to completely block access to the contents of display stand **100**, covers may be added in these spaces and secured to light brackets **116** and back wall **118**.

As an alternative to the security doors **614**, a user of display stand **100** may elect to utilize a set of sliding doors **652**, such as the sliding doors **652** depicted in FIGS. **88** and **89**. FIG. **88** depicts the sliding doors slid to a closed position in which they may be locked together via a lock **654**. FIG. **89** depicts the sliding doors **652** slid to an open position in which the bulk of the sliding door **652** is positioned behind display stand **100**, thereby allowing access to the front side of display stand **100**. The sliding doors **652** may be tamboured doors, or any other type of door that can be slid in a set of upper and lower tracks. In the configuration of display stand **100** illustrated in FIGS. **88** and **89**, an upper track **656** and a lower track **658** are provided to guide the sliding movement of sliding door **652**. Upper track **656** is specifically made up of a pair of front upper track segments **660**, a pair of side upper track segments **662**, and a pair of rear upper track segments **664**. Similarly, lower track **658** is made up of a pair of front lower track segments **666**, a pair of side lower track segments **668**, and a pair of rear lower track segments **670**. A rear upper track segment **664** is depicted in FIG. **83** and a rear lower track segment **670** is depicted in FIG. **82**.

Each front upper track segment **660** is secured to the underside of light bar **220** in the same manner that top member **622** of door frame **616** is secured. FIG. **5** illustrates a side view of a front upper track segment **660** shown attached to a light bar **220**. Front upper track segment **660** includes a plurality of fastener apertures **672** which receive screws that are inserted into a plurality of taps plates **266** (FIG. **85**). Tap plates **266** are inserted into the bottom channel **626** of light bar **220** and secured therein in the manner that has been previously described with respect to top member **622**. Front upper track segment **660** further includes an inner vertical wall **674** and an outer vertical wall **676**. Inner and outer vertical walls **674** and **676** are spaced apart from each other and define a channel **678**. Channel **678** provides a track or raceway in which the upper ends of sliding doors **652** may slide. Front upper track segment **660** may include a plurality of cut outs, similar to cut outs **636** in top member **622**, to accommodate light brackets **116**.

Each front lower track segment **666** includes a plurality of fastener apertures **680** defined in a bottom wall **682** (FIG. **84**). Fastener apertures **680** receive screws, or other suitable fasteners, which are then inserted into fastener aperture **650** defined in front rail **148** of base **120**. These screws, or other fasteners, thereby secure front lower track segment **666** to front rail **148**. Front lower track segment **666** further includes a rear horizontal wall **684** that extends for the length of segment **666**. Rear horizontal wall **684** is positioned on top of a horizontal step **686** defined in the stepped back **180** of front rail **148** (FIGS. **6** and **18**). Front lower track segment **666** further includes an outer vertical wall **688** and an inner vertical wall **690**. Outer and inner wall **688** and **690** are spaced apart from each other to define a channel **692** therebetween. Channel **692** provides a track or raceway for the bottom edge of sliding door **652** to slide in. The attachment of front lower track segment **666** to front rail **148** is illustrated in more detail in FIG. **6**.

Rear upper track segment **664**, which is depicted in more detail in FIG. **83**, includes a back wall **694** to which is attached an outer vertical wall **696** and an inner vertical wall **698**. Inner and outer vertical wall **698** and **696** are spaced apart from each other to thereby define a channel **700**. Channel **700** provides a track or raceway for the upper end of sliding doors **652** when they have been slid behind display stand **100**. Wall **694** of segment **664** is attached to the back of back wall **118** by any suitable method. FIG. **5** illustrates segment **664** attached to back wall **118**.

Rear lower track segment **670**, which is depicted in more detail in FIG. **82**, includes a wall **702** which is attached to an outer vertical wall **704** and an inner vertical wall **706**. Outer and inner vertical walls **704** and **706** are spaced apart from each other to thereby define a channel **708**. Channel **708** provides a track or raceway for the bottom edges of sliding

door **652** when they have been slid behind display stand **100**. Wall **702** may be secured to the back side of back wall **118** in any suitable manner. FIG. **6** illustrates segment **670** secured to the back side of back wall **118**.

Upper side segments **662** and lower side segments **668** may be secured to end panels **102** or feet **146** in any suitable fashion. Each of the side segments **662** and **668** include a channel that is curved and aligned with the channels defined in track segments **660**, **664**, **666**, and **670**. Thus, the channels in upper track segments **660**–**664** are all aligned with each other and provide a smooth channel for the sliding movement of the upper edge of sliding door **652**. Similarly, the channels defined in lower track segments **666**–**670** are all aligned with each other to provide a continuous and smooth channel for the movement of the lower edge of sliding door **652**.

In order to provide electrical power to display stand **100**, an electrical box (not shown) may be attached to the back side of back wall **118** in any suitable location. The electrical box **118** preferably would include one wire for insertion into a standard 110 volt electrical wall outlet. Electrical power would thereby be delivered to the electrical box. The electrical box would preferably include at least three separate outlets for delivering power. A first outlet would allow 110 volt power to be drawn from the electrical box for adjacent sections of display stand **100**. For example, if display stand **100** is made up of multiple bases **120**, each having a slot wall **122** attached, each of these sections may be plugged in to the electrical box on the back of the first section. Electrical power can thereby be delivered to multiple sections in a daisy chain type of fashion. The second outlet on the electrical box is preferably a 110 volt, AC outlet which runs wires to the lights in tops signs **108**.

The third outlet on the electrical box is preferably a twelve volt DC outlet that is connected to a plurality of DC outlets **710** defined in slot wall **122** (FIGS. **86**–**87**). While not illustrated in FIG. **2**, slot wall **122** preferably includes a plurality of apertures evenly spaced about the front face of display stand **100**. Into each of these apertures a DC outlet **710** may be inserted. The DC outlet may be accessed to provide electrical power to the shelf lights or the lights in light boxes **526**. Each DC outlet **710** may be made of a front section **712** and a rear section **714** that are frictionally held together. Wires may be inserted into front section **712** to run electrical power to one of the aforementioned lights. If a given DC outlet **710** defined in slot wall **122** is not going to be used for a particular configuration of display stand **100**, a cap **716** may be inserted into rear section **714**. Cap **716** prevents wires from being inserted into rear section **714**. Cap **716** also prevents inadvertent contact with the live voltage contacts within rear section **714**. As noted above, DC outlets **710** are defined in slot wall **122** throughout the entirety of slot wall **122**. While any spacing may be chosen between outlets **710**, they may each be horizontally separated and vertically separated from each other by one to two feet.

Another manner in which light box **526** may be mounted to back wall **118** of display stand **110** is depicted in FIGS. **90** and **91**. Light box **526** includes a pair of light box brackets **718** that each have an attachment plate **720** at their back end. Attachment plate **720** includes an upper flange **722** and a lower flange **724**. Upper flange **722** is shaped and dimensioned to be received within a large slot **204** defined on slot wall **122**. Lower flange **724** is shaped and dimensioned to be received within a small slot **202** defined on slot wall **122**. The front end of each light box bracket **718** is attached directly to light box **526** by way of a pair of pivot screws **726**. Pivot screws **726** define a pivot axis about which light box **526** may swing. Light box **526** includes a front panel **584** which may display graphics, such as advertising, or other printed indicia. One or more lights may be positioned within light box **526** to provide illumination to front panel **584**. An optional sign **728** may be attached to the bottom end of light box **526**. Sign **728** may house additional printed material, such as advertising, or the like. It includes a front panel **730** which displays this printed material. Sign **728** may be detached from light box **526**. Sign **728** is frictionally retained on light box **526** by inserting a horizontal bar on sign **728** into a pair of locking arms **732** (FIG. **91**). Locking arms **732** are flexible and must be flexed in order to insert the horizontal arm on sign **728** therein. Once inserted therein, sign **728** is securely attached to light box **526**. Sign **728** may pivot about the horizontal axis defined by the bar locked within locking arm **732**.

While the foregoing description and the attached drawings illustrate a number of different signs for displaying printed graphics, these signs could be modified to display electronically generated images. Such modified signs could use Liquid Crystal Displays (LCDs), flat-screen television technology, or other electronic technology to electronically display advertising and/or other graphical information. Such modified signs would preferably be in communication with a controller integrated into display stand **100**. The display stand controller would be adapted to communicate with a remote controller that could remotely control and change the content of the images being displayed on the signs. Such communications could be via an Internet connection between the controllers, a direct telephone line between modems associated with each controller, or by any other known means. Such connections to a remote controller would allow easy updates and changes to be made from a centralized location to the advertising used on the display stands. Furthermore, moving images, rather than still images, could also be displayed on the display stand. Speakers could also be added to the display stand to allow it to broadcast audio signals in addition to, or in conjunction with, the visual images displayed on the signs.

While the invention has been described in terms of the embodiments discussed above and illustrated in the accompanying drawings, it will be understood by one skilled in the art that the present invention is not limited to these particular embodiments, but includes any and all such modifications that are within the spirit and scope of the present invention as defined in the appended claims.

What is claimed is:

1. A display stand comprising:

a generally vertical back wall having a front face, a back face, a first side, and a second side, said front face including a plurality of parallel, generally horizontal slots that continuously extend for a majority of the distance from said first side to said second side;

a shelf releasably attachable to said front face of said back wall, said shelf adapted to be selectively inserted into at least one of said slots to thereby support said shelf on said back wall, said shelf being attachable to said back wall at a plurality of different heights and at a plurality of different side-to-side positions between said first and second sides;

wherein said shelf includes a shelf base and a bracket, said bracket including an insert that fits into said at least one of said slots to thereby support said bracket and said shelf base on said back wall, said shelf base including a bracket engaging portion and a wall engaging portion, said bracket engaging portion of said shelf base being adjustably engaged at said bracket, said shelf base

being adapted to be adjusted relative to said bracket of said shelf to support said shelf base of said shelf in a selected one of a plurality of different angular orientations relative to said back wall, said wall engaging portion of said shelf base engaging another one of said slots of said back wall when said shelf base is supported at said bracket and said back wall; and

a vertical end panel attached to the back wall adjacent each one of the sides of the back wall, said end panel being oriented generally perpendicular to said back wall.

2. The display stand of claim **1** wherein said shelf includes said shelf base and a shelf tray, said shelf tray being releasably attachable to said shelf base.

3. The display stand of claim **2** further including a light bracket attachable to said shelf base, said light bracket adapted to support a light positioned underneath said shelf base.

4. The display stand of claim **2** wherein said shelf tray is slidingly attached to said shelf base such that said shelf tray can slide with respect to said shelf base.

5. The display stand of claim **4** wherein said shelf includes a plurality of dividers adapted to separate products supported on said shelf.

6. The display stand of claim **5** further including a second shelf having a second shelf base and a second shelf tray, said second shelf tray adapted to slidingly attach to said second shelf base, said second shelf base being insertable into at least one of said slots.

7. The display stand of claim **6** wherein said second shelf includes no dividers.

8. The display stand of claim **7** wherein said shelf tray is adapted to be slidingly coupled to said second shelf base, and said second shelf tray is adapted to be slidingly coupled to said shelf base.

9. The display stand of claim **1** wherein said shelf base selectively engages said bracket at one of at least two positions to adjustably mount said shelf base at said rear wall in one of at least two orientations.

10. The display stand of claim **1** wherein said shelf includes first and second sides and a connector, said connector adapted to couple to a second shelf positioned adjacent one of the first or second sides of said shelf, said connector maintaining said shelf and said second shelf in horizontal alignment with each other when said connector is coupled to said second shelf.

11. The display stand of claim **1** further including at least one sign and at least one sign bracket, said sign being coupled to said sign bracket, said sign bracket adapted to be attached to, and detached from, said back wall.

12. The display stand of claim **11** wherein said sign is pivotally attached to said bracket such that said sign can be pivoted to a plurality of different orientations with respect to said sign bracket, said sign including a lock for maintaining said sign in a selected orientation with respect to said sign bracket.

13. The display stand of claim **11** wherein said sign includes a graphic panel and at least one light positioned behind said graphic panel and adapted to illuminate said graphic panel, said graphic panel being made of an at least partially translucent material.

14. The display stand of claim **1** further including an arm having a slot insert that is adapted to be inserted into at least one of said slots, said arm supporting at least one light.

15. The display stand of claim **14** further including at least one channel defined adjacent a top of said back wall, said arm further including a channel insert adapted to be inserted into said channel and help support said arm on said back wall.

16. The display stand of claim **1** further including an arm adapted to be secured to said back wall in a snap-fitting manner, said arm having a light supported thereon.

17. The display stand of claim **1** further including a vertical divider panel releasably attachable to said back wall at a plurality of side-to-side positions between said first and second sides.

18. The display stand of claim **17** further including a plurality of divider panel brackets that each have at least one insert adapted to be inserted into at least one of said slots and to support each of said brackets on said back wall, said divider panel brackets each including at least one pin and said divider panel including a plurality of channels adapted to receive at least one of said pins to allow said divider panel to be releasably coupled to said plurality of divider panel brackets.

19. The display stand of claim **1** further including a cabinet having at least two sidewalls, a top wall, and at least one pivotable door, said cabinet including at least one insert adapted to be inserted into said slots and to thereby releasably support said cabinet on said back wall.

20. The display stand of claim **1** further including a plurality of electrical outlets positioned on said front face of said back wall.

21. The display stand of claim **20** wherein said plurality of electrical outlets are connected to a source of direct electrical current having a voltage of less than 110 volts.

22. The display stand of claim **1** wherein said slots have at least two different shapes.

23. The display stand of claim **1** wherein said slots have first and second shapes, said first shapes extending vertically upward into said back wall, said second shapes extending vertically downward into said back wall, said slots being arranged in a horizontally alternating fashion between slots having said first shape and slots having said second shape.

24. The display stand of claim **1** further including a base attached to said back wall, said base extending forwardly from said back wall and including a leveler mechanism for changing the horizontal orientation of said base.

25. The display stand of claim **1** further including:

a base attached to said back wall; and

at least one door positioned in front of said back wall such that said at least one drawer is surrounded by said base, said end panels, said back wall, and said at least one door.

26. The display stand of claim **25** further including an arm having a slot insert that is adapted to be inserted into at least one of said slots, said arm supporting at least one light and at least a portion of a frame surrounding said at least one door.

27. The display stand of claim **26** wherein said at least one door opens by pivoting about a vertical axis.

28. The display stand of claim **26** wherein said at least one door opens by sliding in an upper track and a lower track, said upper and lower tracks defining a path for movement of said at least one door.

29. The display stand of claim **1** wherein said back wall comprises a plurality of extruded slot wall segments attached to a metal frame.

30. The display stand of claim **1** wherein said bracket and said self base include a plurality of inserts adapted to be inserted into said slots to releasably support said shelf on said back wall, said inserts and said slots being configured such that said shelf must be rotated to be removed from said

back wall, said shelf requiring no more than forty degrees of rotation to be removed from said back wall.

31. The display stand of claim **1** further including:

a vertical utility pole spaced from, and positioned in front of, the front face of said back wall;

at least one bracket having a plurality of inserts adapted to be inserted into at least one of said slots whereby said at least one bracket can be releasably supported on said back wall, said bracket adapted to support said vertical utility pole; and

an item holder releasably coupled to said vertical utility pole, said item holder adapted to hold and support an item.

32. The display stand of claim **31** wherein said item is at least one cigarette pack and said item holder is a dispenser for dispensing a plurality of the cigarette packs.

33. The display stand of claim **31** wherein said item is at least one piece of literature and said item holder is a bin adapted to hold a plurality of said pieces of literature.

34. The display stand of claim **31** wherein said item is at least one graphic panel and said item holder is a container for at least one of said graphic panels.

35. A display stand comprising:

a generally vertical back wall having a front face, a back face, a first side, and a second side, said front face including a plurality of slots; and

a plurality of shelves having first and second sides and being releasably attachable to said front face of said back wall, said shelves each including inserts that fit into said slots to thereby support said shelves on said back wall, said shelves being attachable to said back wall at a plurality of different heights and at a plurality of different side-to-side positions between said first and second sides of said back wall;

each of said shelves including a shelf base and at least one bracket releasably attachable to said shelf base, each of said brackets including at least one insert that fits into at least one of said slots to thereby support said bracket and an associated shelf base on said back wall, said shelf base including a bracket engaging portion and a wall engaging portion, said bracket engaging portion of said shelf base being adjustably engaged at said bracket, said bracket being adapted to selectively support the associated shelf base in one of a plurality of different angular orientations via adjustment of said bracket engaging portion relative to said bracket, said wall engaging portion of said shelf base engaging another one of said slots of said back wall when said shelf base is supported at said bracket and said back wall;

at least one panel attached to said back wall and extending generally vertically along said back wall, said panel being oriented generally perpendicular to said back wall to provide an end panel generally at at least one of said first and second sides of said back wall; and

a connector attached to each of said shelves, said connector adapted to couple a first one of said shelves with a second one of said shelves when the second one or said shelves is positioned adjacent one of the sides of said first one of said shelves, said connector maintaining said first and second ones of said shelf bases in alignment with each other when said first and second ones of said shelves are coupled together by said connector.

36. The display stand of claim **35** wherein said shelves each include a shelf tray, said shelf tray being slidably attached to said shelf base such that said shelf tray can slide with respect to said shelf base.

37. A display stand comprising:

a generally vertical back wall having a front face, a back face, a first side, and a second side, said front face including a plurality of slots;

a plurality of shelves having first and second sides and being releasably attachable to said front face of said back wall, said shelves being attachable to said back wall at a plurality of different heights and at a plurality of different side-to-side positions between said first and second sides of said back wall;

at least one bracket releasably attachable to each one of said shelves, said bracket including an insert that fits into at least one of said slots to thereby support said bracket and an associated shelf on said back wall, said shelf including a bracket engaging portion and a wall engaging portion, said bracket engaging portion of said shelf being adjustably engaged at a plurality of shelf engaging portions of said bracket, said bracket being adapted to selectively support the associated shelf in one of a plurality of different angular orientations via adjustment of said bracket engaging portion of said shelf relative to said shelf engaging portions of said bracket, said wall engaging portion of said shelf engaging another one of said slots of said back wall when said shelf is supported at said bracket and said back wall;

a connector attached to each of said shelves, said connector adapted to couple a first one of said shelves with a second one of said shelves when the second one of said shelves is positioned adjacent one of the sides of said first one of said shelves, said connector maintaining said first and second ones of said shelves in horizontal alignment with each other when said first and second ones of said shelves are coupled together by said connector, said shelves each including a shelf base and a shelf tray, said shelf tray being slidably attached to said shelf base such that said shelf tray can slide with respect to said shelf base, wherein a first set of said shelf trays includes dividers adapted to separate products supported thereon; a second set of said shelf trays includes no dividers; and

said first and second sets of shelf trays are both adapted to be releasably and interchangeably attachable to said shelf bases.

38. The display stand of claim **35** wherein said bracket selectively engages said shelf base at one of at least two positions to adjustably mount said shelf base to said rear wall in one of at least two orientations.

39. The display stand of claim **35** further including at least one sign and at least one sign bracket, said sign being coupled to said sign bracket, said sign bracket adapted to be attached to, and detached from, said back wall, said sign further being pivotally attached to said bracket such that said sign can be pivoted to a plurality of different orientations with respect to said sign bracket, and said sign including a lock for maintaining said sign in a selected orientation with respect to said sign bracket.

40. The display stand of claim **36** further including an arm adapted to be secured to said back wall in a snap-fitting manner, said arm having a light supported thereon.

41. The display stand of claim **35** further including:

a vertical divider panel releasably attachable to said back wall at a plurality of side-to-side positions between said first and second sides of said back wall; and

a plurality of divider panel brackets that each have at least one insert adapted to be inserted into at least one of said slots and to support each of said brackets on said back wall, said divider panel brackets each including at least one pin and said divider panel including a plurality of channels adapted to receive at least one of said pins to allow said divider panel to be releasably coupled to said plurality of divider panel brackets.

42. The display stand of claim **35** wherein said slots are generally horizontal slots that continuously extend for a majority of the distance from said first side of said back wall to said second side of said back wall, said slots being arranged in a horizontally alternating fashion between slots having a first shape and slots having a second shape, said first shapes extending vertically upward into said back wall, and said second shapes extending vertically downward into said back wall.

43. The display stand of claim **35** further including:

a base attached to said back wall;

wherein said at least one panel comprises at least two end panels attached to said back wall adjacent the first and second sides of said back wall; and

at least one door positioned in front of said back wall such that said at least one drawer is surrounded by said base, said end panels, said back wall, and said at least one door.

44. The display stand of claim **43** further including an arm having a slot insert that is adapted to be inserted into at least one of said slots, said arm supporting at least one light and at least a portion of a frame surrounding said at least one door.

45. The display stand of claim **35** wherein said shelves each include a plurality of inserts adapted to be inserted into a plurality of said slots to releasably support said shelves on said back wall, said inserts and said slots being configured such that said shelves must be rotated to be removed from said back wall, said shelves requiring no more than forty degrees of rotation to be removed from said back wall.

46. The display stand of claim **42** wherein said shelves each include a plurality of inserts adapted to be inserted into a plurality of said slots to releasably support said shelves on said back wall, said inserts and said slots being configured such that said shelves must be rotated to be removed from said back wall, said shelves requiring no more than twenty degrees of rotation to be removed from said back wall.

47. A display stand comprising:

a generally vertical back wall having a front face, a back face, a first side, and a second side, said front face including a plurality of slots; and

at least one end panel attached to said back wall adjacent at least one of said first and second sides of said back wall, said at least one end panel extending generally vertically along said back wall; and

a plurality of shelves releasably attachable to said front face of said back wall, said shelves each including an upper insert and a lower insert, said upper and lower inserts adapted to fit into separate ones of said slots to thereby support said shelves on said back wall, said shelves being attachable to said back wall at a plurality of different heights and at a plurality of different side-to-side positions between said first and second sides, said slots and said upper and lower inserts being configured such that said shelves must be rotated to be removed from said back wall, said shelves requiring no more than thirty degrees of rotation to be removed from said back wall;

wherein said upper insert comprises a bracket that engages at least one of said slots, said bracket comprising an arcuate bracket element having a plurality of shelf mounting portions along an upper surface thereof, said shelf comprising a shelf base having a bracket engaging portion adapted to selectively and adjustably engage said shelf mounting portions of said bracket, said shelf base being adjustable relative to said bracket to adjust an orientation of said shelf base relative to said back wall via adjustment of said bracket engaging portion relative to said shelf mounting portions; and

wherein said lower insert comprises a wall engaging portion of said shelf base that extends from a lower portion of said shelf base for engaging another one of said slots of said back wall when said shelf base is supported at said bracket and said back wall.

48. The display stand of claim **47** wherein said slots are generally horizontal slots that continuously extend for a majority of the distance from said first side of said back wall to said second side of said back wall, said slots being arranged in a horizontally alternating fashion between slots having a first shape and slots having a second shape, said first shapes extending vertically upward into said back wall, and said second shapes extending vertically downward into said back wall.

49. The display stand of claim **48** further including:

a base attached to said back wall and extending forwardly from said front face of the back wall; and

wherein said at least one end panel comprises at least two end panels attached to said back wall adjacent the first and second sides of said back wall.

50. The display stand of claim **49** wherein said shelves each include said shelf base and a shelf tray, said shelf tray being slidably attached to said shelf base such that said shelf tray can slide with respect to said shelf base.

51. The display stand of claim **50** wherein a first set of said shelf trays includes dividers adapted to separate products supported on thereon; a second set of said shelf trays includes no dividers; and said first and second sets of shelf trays are both adapted to be releasably and interchangeably attachable to said shelf bases.

52. The display stand of claim **49** wherein said bracket selectively engages said shelf base at one of at least two positions to adjustably mount said shelf base to said rear wall in one of at least two orientations, said lower insert pivoting at the respective one of said slots when said shelf base is adjusted.

53. The display stand of claim **49** wherein said shelves each include a connector, said connector adapted to couple a first one of said shelves with a second one of said shelves when the second one of said shelves is positioned adjacent a side of said first one of said shelves, said connector maintaining said first and second ones of said shelf bases in alignment with each other when said first and second ones of said shelves are coupled together by said connector.

54. The display stand of claim **49** further including:

at least one sign;

at least one sign bracket pivotally attached to said sign such that said sign can be pivoted to a plurality of different orientations with respect to said sign bracket, said sign bracket adapted to be attached to, and detached from, said back wall; and

a lock for maintaining said sign in a selected orientation with respect to said sign bracket.

55. The display stand of claim **49** further including an arm having a slot insert that is adapted to be inserted into at least one of said slots, said arm supporting at least one light.

56. The display stand of claim 49 further including an arm adapted to be secured to said back wall in a snap-fitting manner, said arm having a light supported thereon.

57. The display stand of claim 49 further including:

a vertical divider panel releasably attachable to said back wall at a plurality of side-to-side positions between said first and second sides of said back wall; and

a plurality of divider panel brackets that each have at least one insert adapted to be inserted into at least one of said slots and to support each of said brackets on said back wall, each said bracket further including at least one pin and said divider panel further including a plurality of channels adapted to receive at least one of said pins to allow said divider panel to be releasably coupled to said plurality of divider panel brackets.

58. A display stand comprising:

a generally vertical back wall having a front face, a back face, a first side, and a second side, said front face including a plurality of slots;

a plurality of shelves releasably attachable to said front face of said back wall;

at least one panel attached to said back wall and extending generally vertically therealong, said at least one panel being positioned at an end of at least one of said shelves to define an end panel at said end of said at least one of said shelves; and

a plurality of shelf brackets, each said shelf bracket including at least one insert adapted to fit into at least one of said slots to thereby support an associated shelf on said back wall, each of said shelves being attachable to the associated shelf bracket in a plurality of different configurations such that said shelf bracket supports the associated shelf in a selected one of a plurality of different orientations with respect to said back wall, said shelf including a wall engaging portion that engages another one of said slots of said back wall when said shelf base is supported at said shelf bracket and said back wall.

59. The display stand of claim 58 wherein said plurality of different orientations includes a first orientation in which said shelves are generally perpendicular to said back wall, and a second orientation in which said shelves are angled downwardly from said back wall.

60. The display stand of claim 59 wherein said slots are generally horizontal slots that continuously extend for a majority of the distance from said first side of said back wall to said second side of said back wall, said slots being arranged in a horizontally alternating fashion between slots having a first shape and slots having a second shape, said first shapes extending vertically upward into said back wall, and said second shapes extending vertically downward into said back wall, each said shelf bracket including a plurality of inserts, one of said inserts adapted to insert into said slots having said first shape, and another of said inserts adapted to insert into said slots having said second shape.

61. The display stand of claim 60 wherein said shelves each include a shelf base and a shelf tray, said shelf base being insertable into at least one of said slots and said shelf tray being slidably attached to said shelf base such that said shelf tray can slide with respect to said shelf base.

62. The display stand of claim 61 wherein a first set of said shelf trays includes dividers adapted to separate products supported on thereon; a second set of said shelf trays includes no dividers; and said first and second sets of shelf trays are both adapted to be releasably and interchangeably attachable to said shelf bases.

63. The display stand of claim 1, wherein said bracket comprises an arcuate bracket element having a plurality of shelf mounting portions along an upper surface thereof, said bracket engaging portion of said shelf base being adapted to selectively and adjustably engage said shelf mounting portions of said bracket.

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